QL Today

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The Magazine about QL, QDOS, Sinclair Computers, SMSQ...

Nasta reveals the secrets of serial communications

Contents

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QL Today

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We welcome your comments, suggstions and articles. YOU make **QL Today** possible. We are constantly changing and adjusting to meet your needs and requirements. Articles for publication should be on a 3.5" disk (DD or HD) or sent via Email or into one of the JMS-BBS's. We prefer ASCII, Quill or text87 format. Pictures may be in _SCR format, we can also handle GIF or TIF. To enhance your article you may wish to include Saved Screen dumps. PLEASE send a hardcopy of all screens to be included. Don't forget to specify where in the text you would like the screen placed.

Article and Advertising deadlines are as follows:

Issue 1: 15 April
Issue 2: 15 June
Issue 3: 15 August
Issue 4: 15 October
Issue 5: 15 December
Issue 6: 15 February

Editorial

Dilwyn Jones

Jochen and I attended the Byfleet Quanta workshop recently, and what a lovely day out that was. Very nice to see that the QL scene is still so alive and brimming with enthusiasm. In Britain, one of the high spots of the QL calendar is the annual Bristol Quanta sub-group bash, held in Portishead this November. I'm really looking forward to it and hope to meet as many QL users as possible there.

We're back in high season for computers again, in the run up to the Christmas period. Just what lovely little goodies can we expect from Santa this year? MinisQL, Q40, Milan, Goldfire, colour drivers, QPC2, Masterpiece, IBOX, and the offerings of the new traders on the scene (see news pages) thank you very much, Santa Jochen, I'll have one of each! Admittedly, some of this relies on the efforts of one man, Tony Tebby, and his work on SMSQ/E and the fabled colour drivers. Although news of progress has been almost non-existent, and it's taking far longer than we'd hoped, it'll all be worth it eventually.

And let's not forget that although a lot hinges on the work of Tony Tebby, there's plenty going on independently of that, for example, we can now hook up Iomega ZIP drives to Qubide thanks to the work of Phil Borman, Joachim van der Auwera has contributed a lot with his efforts on Prowess, Tony Firshman is producing a lot of small but significant hardware (e.g. RomDisq and MPlane with the Masterpiece and IBOX to come), Keith Mitchell and QBranch are producing a little marvel in the MinisQL, Nasta continues to beaver away in Croatia - there's plenty to be positive about!

On the software scene, Phil Jordan has taken over Steve Johnson's PD & Shareware service, and should be up and running by the time you read this. Good luck to him, and thanks to Steve for his efforts over the years. And QL Today contributor Darren Branagh (also known to some as the editor of Z88 User newsletter) steps into the software trading world and is setting up in business as Q-Celt software in Ireland, best wishes to him too. Not so good news for religious software supplier George Morris, who has been laid up for a few weeks after badly injuring an ankle in a fall - our sympathies and best wishes to George for his recovery from that incident.

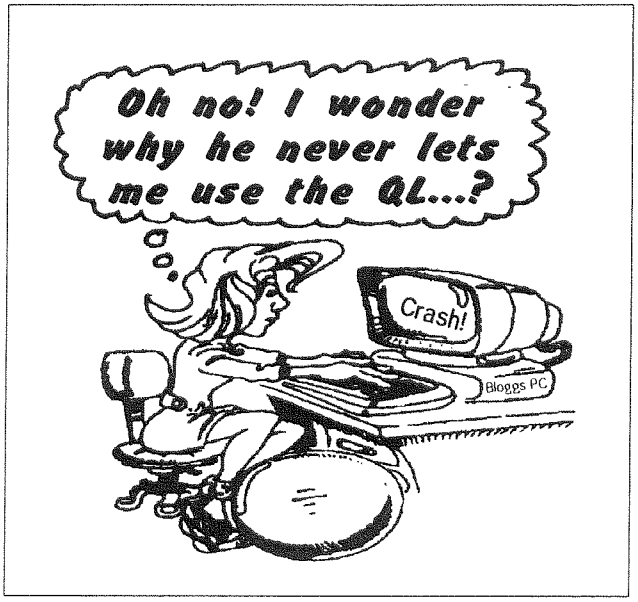
On a contentious note, please read the contributions by Phil Stokes and Joe Haftke in this issue. Do you agree with what they say? Do you disagree completely with them? Write in and let us know how you feel. There is a lot of discussion on the QL's future going on at the moment, and I feel it important to get these issues out in the open before we move on the the next stage in the life of the QL, when the new operating system (i.e. colour drivers etc) comes out and a lot of new hardware and emulator versions in its wake.

Jochen and I are starting to run out of ideas for our little cartoon corner. We could do with some fresh blood on this. If you have an idea for a cartoon or a gentle dig at someone in the QL scene, get in touch. I'd hate to see the cartoon disappear! The one where a PC was thrown out of a window seems sadly relevant to Club QL International at the moment given the problems their editor (Mike Kenneally) has experienced with his system and the disruption caused to their newsletters. I was tempted to run another cartoon on the same line to have a dig at him and his PC/QXL, but that would have probably been unwise as he lives not too far from me!

Finally, if anyone has sent anything to my old email address at work in the last few weeks, you may have noticed it's been rejected or not acknowledged. Equally, I'd virtually disappeared off the QL Users Email Mailing List, thinking it had just gone quiet until Jochen said something to me. Problems, problems, please do not use the old email address any more for QL related matters and send everything to the 'softnet' address inside the front cover.

Thank you.

Cartoon



News

Turbo and Perfection News

(Mark Knight)

No progress has yet been made on the Turbo compiler itself, as the team are still awaiting (October) recovery of the hard drive containing the source files. The Turbo Toolkit has been extensively changed and the Turbo Toolkit is now so compatible with SMSQ/E that it can actually be installed as an SMSQ/E module! The Toolkit now contains additional keywords, e.g. to help support high resolution screens. Another item being worked on is a new Turbo Pointer Toolkit, although it still needs a lot of work, to allow Turbo to compile pointer driven programs (an alternative to QPTR Toolkit perhaps?). The new version of Turbo compiler, which may not happen until summer 1999, will allow compilation of BASIC programs under SMSQ/E, but may not allow the compilation of all of the enhanced SBASIC features, at least not in the early versions. It is still hoped that when eventually available, Turbo will be re-released as Freeware.

A new version of Perfection is currently being Beta tested, which supports high resolution screens - at the time of writing it had been tested with screen sizes up to 1024x768. This version of Perfection includes improved configuration, e.g. full path lengths for improved subdirectory support. Other changes planned include dramatic improvements in cursor handling. It is hoped that Perfection can be re-released around the end of December 1998 or January 1999. Unfortunately, it has not been possible to find the source code for the Perfection Spell Checker, so that particular part of the application may not be re-released.

Mark Knight is also in the final stages of writing a screen access toolkit for all QL/SMSQ/whatever systems. This package would allow users to create animations, for example. This package will also be freeware and is hoped to be out by the end of 1998.

Z88 User Magazine Issue 2

QL users who also use a Z88 may like to know that issue 2 of Z88 User magazine is now available from W. N. Richardson & Co. The magazine includes articles about the Z88 from well known QL users. The subscription rate is £12.00 for 6 bi-monthly issues - contact Bill Richardson for further details.

MPLANE from TF Services

At the Byfleet Quanta Workshop recently, Tony Firshman talked extensively about his new low profile backplane card for the QL and Aurora, called MPlane. It is designed to allow QL and Aurora circuit boards to be mounted in small cases, such as mini tower cases and the new MinisQL notebook cased Aurora from QBranch. When used with a QL and Super Gold Card, for example, a securely mounted system is possible since the arrangement of connectors allows the Super Gold Card to be alongside the QL board, and can even be easily and securely fixed to the QL board via a screw using an existing hole on the QL circuit board. This should help prevent the saga of Super Gold Cards falling out of their mountings en route to a QL show in the future (says he from experience).

The MPlane has three expansion slot connectors, and a slot for the existing QL or Aurora motherboard. The connectors are arranged as two rows of two rather than a single row of connectors as used in Qubbesoft's QPlane, for example. This makes the MPlane more suitable for use in flat thin notebook style cases, for example, since the little board is only two connectors high and two wide. Measure your QL expansion connector and you can get an idea of the size of MPlane from that!

MPlane also has a QL-style EPROM expansion connector, into which your toolkit EPROMs or EPROM slot expansion devices can be attached, including TF Services' own RomDisq flash memory add on. Additional address lines and a read/write are available too. The board has standard power connectors as used on PC-style power supplies. +/- 12V are generated on the board from the power inputted. MPlane can be used with the qbraquet2 mounting system from QBranch.

MPlane uses a 4 layer circuit board with noise reducing internal power and ground planes. Extra smoothing capacitors are fitted and all sensitive signal lines have pull up/pull down resistors as needed.

QUBIDE Version 2.00 Upgrade from Qubbesoft P/D

After much petitioning, the Qubide finally supports ATAPI-IDE ZIP drives, as master or slave drives. The fact that these ZIP drives are commonly used on other computers and the 100MB removeable media are both widely available and only cost about 10 pounds made them an ideal candidate for Qubide support, since SyQuest have discontinued much of the EZ-drives previously used by Qubide. It's also hoped to add support for the LS120 ATAPI-IDE 120MB removable media drives once Qubbesoft can obtain one to test for use with Qubide. When using ZIP drives, features such as Media Lock are available where the Qubide software causes the removable media to be locked in the drive to prevent them being accidentally ejected (the EJECT button is disabled temporarily). In the event of a power failure, a crash or other 'emergency' situation, a recessed release knob can be used to release the cartridge.

In addition to upgrading the EPROM on the Qubide to version 2, the upgrade consists of two new GAL programmable logic chips for the Qubide, and a new Qubide Utilities diskette. Do not throw the old chips away, they can be reprogrammed by Qubbesoft P/D, so should be returned for reuse (as well as doing the environment a favour by not throwing them away).

There are now certain other slight differences in operation of the Qubide which can be set with the WIN_CTRL command. A different action is available with the MAKE_DIR command, to cater for users who wished to be able to make directories after the files were copied to the hard drive - suitably named files could be moved into the new subdirectories if their names match, albeit with the loss of a small amount of disk space. This gives a degree of compatibility with Tony Tebby's DV3 device drivers.

A TrashCan feature can now be optionally provided. Deleted files are not just deleted if this option is selected. Instead they are moved into the TrashCan directory on the hard drive, where they stay until permanently deleted. A utility program called TRASHCAN_OBJ allows manipulation of the files (restoring/permanent deleting, etc) in the TrashCan. The TrashCan interface is documented and available on request from Qubbesoft for BASIC/C/Assembler programmers.

The Qubide version 2 upgrade costs £10.00. You can either do the upgrade yourself, or send the Qubide back for Qubbesoft to do the work for you if you add a little extra for their costs in doing this, such as postage.

Direct sector access support is provided, so with additional software (and it is anticipated that newer versions of Discover will do this) it is also possible to read from and possibly write to PC ZIP drives, for example. The direct sector access facility also raises the possibility of CD-ROM access, but only via direct sector access, and discussions are taking place with Dave Walker to upgrade Discover to allow transfer of files from PC CD-ROMs in the future, but the CDROM access features cause a lot of problems such as handling directory/filename name length handling when converted names exceed 36 characters in length, so perhaps you should not hold your breath too long on that one.

RWAP Software News

Flashback SE v2.03 has now been released and is available as an upgrade from the original version at the price of £5. If however, you have purchased an earlier upgrade from RWAP Software, then the upgrade will only cost another £3. This version has taken quite a bit of work to produce (hence the higher price), but includes extra facilities: the ability to use any size resolution supported by the QL (and re-size Flashback's windows up to the full screen); the ability to use the F4 sub-window to look at two records from the same database at the same time; a new read-only mode for databases; and Flashback will now even allow you to include (a umlaut) in your databases.

The report generator will now print large numbers without using scientific notation and there have been some minor improvements to this program and the printer driver program. There are even some further bug fixes in the original code.

I have also now re-released Hoverzone (another arcade game previously sold by Talent). This is a good Defender clone and at only £5 a good little stocking filler. I can provide an Arcade Package of Hoverzone and Stone Raider II for only £8.

Some of the support disks for the SBASIC / SuperBASIC Reference Manual have been updated to include a list of the keywords contained in the more common commercial toolkits not covered in the Manual, and also the example files also now include REMark statements if they require additional toolkits to work, other than the toolkit which provides the keyword being demonstrated.

The latest versions are: Q-Index (v1.01 - disk last updated 26/9/98), the Examples disk was last updated 8/8/98 and the public domain toolkits were last updated 18/3/98).

Sidewriter is now available once again. This is a simple package which allows you to print text files and spreadsheets out sideways on an Epson compatible 9-pin or 24-pin printer, or an inkjet with an Epson compatible mode. Both pointer driven and keyboard driven versions supplied. v1.07 incorporates an improved manual, improved printing on Inkjet printers (use the 24-pin mode) and also fixes a few minor bugs. This forms an excellent companion to 3D Terrain and QL Genealogist.

I have now released v3.21 of QL Genealogist, the much acclaimed program for the family historian. This version corrects all known problems with ealier versions.

There are also much enhanced versions available for Windows on the PC costing £55 - ask for details.

Improvements to Q-Route are still proceeding apace, with the latest version of the BRITAIN.MAP being 24/8/98 which includes the second Severn Crossing and also ensures that some towns in Scotland no longer appear in the Sea!!

A map of Ireland should be available as from 1/12/98.

I have also now released a more detailed map of West Yorkshire, which is available for the price of £1 (please supply a blank formatted disk). It is hoped to produce a series of these more detailed maps covering the whole of Britain, so that the map BRITAIN.MAP can be used to plan a long journey and then the more detailed maps can be used for specific areas which interest you.

A map of Catalonia is also available cost £2.

A hint from Alf Kendall: CAUTION! If using Dr Solomon anti-virals you may have to deactivate it or not install it if using QPC - it seems to get a little confused and causes some difficulty.

QPC2 from Jochen Merz Software

Marcel Kilgus, author of QPC, has QPC2 up and running, although not quite completed at the time of writing. Marcel proudly announced that the conversion of the emulation itself took just one day, although obviously other elements of the conversion took far longer. The new version of QPC can be task-switched under Windows on a PC, which means you can use ALT TAB (their version of CTRL C on a QL) to switch between QPC and other Windows applications without having to go through the quit and restart procedures as you had to before. QPC2 will need Direct-X drivers for the video on a PC, but if your system does not have this, you can, for example, get copies on some of the PC magazine cover CDs. The version of QPC2 we saw in October still had problems with the ALT TAB job switching, occasionally locking up, but Marcel Kilgus could be seen running from machine to machine doing intensive testing on as many computers as possible at the Byfleet workshop. The lockup problem has been fixed by now.

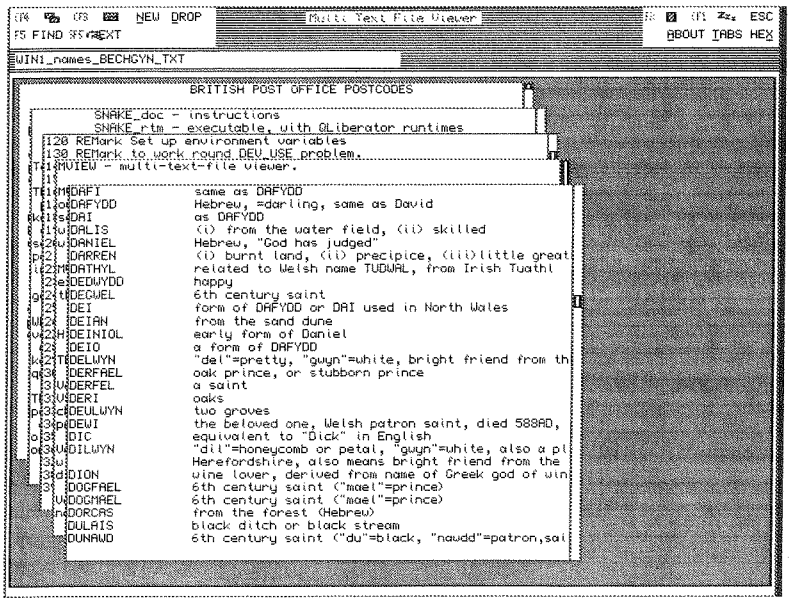
PD Software Scene News

MTEXT *by CHRISTOPHER CAVE*

Christopher Cave, co-author of the C68 libraries for QMenu, has given QL Today a review copy of his latest program, MText, for viewing multiple text files. It can display both plain text files, Quill _doc files, _SAV format SBASIC files on SMSQ systems as well as unravelling SROFF file types to some degree. It can open up to 16 text files for viewing and comparison. It is well suited to the C programmer's needs, having been written in part to assist the author to pore over C68 "include" files and documentation. It can also view directory listings. There is also a search facility to find text within an open text file. Files are opened to partially overlap on the screen (rather like A-Z tab cards in a card index) and you can bring whichever you wish to view to the top by simply clicking on a part of an open document, for quick switching between files for comparision, for example. The program is pointer driven. There are various command line options, wildcard facilities, various methods of selecting which of the open text files to view and so on. We hope to publish a full review of this program in a forthcoming issue of QL Today. Meantime, further details from the author by email on ccave·cix.compulink.co.uk

Christopher Cave has just notified us that since this was written, he has now added two facilities to MView since V1.5,

1) Abacus spreadsheets can now be displayed.
2) Printing can be redirected to any file/device.



Graphics Viewer *V1.14 from Dilwyn Jones*

This program was written to allow viewing and printing of most QL graphics file formats, including uncompressed screens, _PIC files, compressed clipart screens, Eye-Q files, The Painter files and even pages and area files from Professional Publisher and Page Designer 2 and 3. Monochrome PCX and IMG files can also be handled. Files can either be loaded from a pointer driven menu within the program, or passed via the FileInfo thing from the Files menu of QPAC2. Pointer controlled panning and scrolling of the picture is possible, allowing it to view larger files than it can show on its display. Menus are resizable, allowing it to be used on high resolution displays such as SVGA. An interface to SDUMP allows dumping of the pictures to suitable printers. SDUMP is a screen dump facility built into Miracle Systems disk interfaces such as Trump Cards and Gold Cards. SDUMP is also supplied with SMSQ/E as a file called SDUMP_REXT which has to be LRESPRed before the screen dumps can be used. In addition to the printer types supported by SDUMP, print routines for HP Deskjet black ink printers are built in, as are Canon bubblejet (BJ10sx) screen dump routines. The Canon routines also have a colour printer dump facility. SDUMP also includes some colour printer types. You will also need Toolkit 2 and QMenu extensions (MENU_REXT) to use this program. Graphics Viewer is freeware.

Steve Johnson PD service - change of ownership

Steve Johnson has sent us a fax explaining that his PD and Shareware library service has been taken over by Phil Jordan. Steve wanted to thank all of his customers over the years, and to wish Phil Jordan good luck in his venture. Equally, I'm sure that we would all like to thank Steve for his service over the years. Steve Johnson's PD & Shareware library service was one of the largest sources of QL software, and many people had expressed some concern that the service could be lost altogether.

At the time of writing (mid October), Phil had not fully decided on a trading name, saying that it would either be in his own name or simply called PJPD (Phil Jordan PD library service). Phil said he hoped to maintain a similar type of service to that provided by Steve Johnson. In addition, Phil plans to take the library to QL shows and workshops so that users can get copies of disks and catalogues on the spot.

Further details from: **Phil Jordan, 42 Hawthorne Crescent, Cosham, Nr. Portsmouth, Hants., PO6 2TP, England. Telephone: 01705-370574**

Q-CELT Software

Exciting news from the Irish Republic. QL Today contributor and Z88 User editor Darren Branagh is contemplating setting up in business as a QL software trader. Darren plans to offer a value packed compilation of older software initially and a new simple to use database called EasyBase. Darren also hopes to attend QL shows outside of Ireland, where he may offer an on-the-spot PD/Freeware software copying service. Very much in the early stages as I write - more news in the next issue hopefully.

Q-Celt Software, c/o Darren Branagh, The Falconry, Glenmacnass, Glendalough, Co. Wicklow, Ireland. Tel. (+353) 404 45319, Fax (+353) 404 45558.

NESQLUG Goes Semi-Ezine

Al Boehm

NESQLUG, a Quanta Sub group located in New England, USA, has put out a newsletter for a number of years. While some of the articles were of local interest, sporadically, articles of more general interest have been published by Quanta. We found that some members wanted to continue a paper copy newsletter, and some members wanted to go to an on-line web page newsletter, while others wanted both! We decided to try to please everybody.

Main ideas of the NESQLUG web page are:

Articles are to be sent via Email or floppy to the NESQLUG editor (Ed Kingsley, **Edk4@aol.com**). The Editor will post them on a restricted web page after editing. Anyone can get to the NESQLUG homepage and general info pages, but a secret password will allow only members to access articles held on the restricted web page.

At the hard copy deadline date (1st of: Jan, Mar, May, Jul, Sep, Nov), the publisher (Al Boehm) will take the articles off the web, print, and mail them to those who pay the hardcopy fee ($12 per year in US).

A reduced membership fee is $5 for those who want only access to the restricted web page, that is, they would not receive a hard copy newsletter.

The Quanta editor or his agent will be given the password so that he can browse the articles for any that have broader interest.

The NESQLUG web page is at:

http://www.airnet.net/boehm/Index.html

London Quanta Group Meeting

Anyone considering coming to the next meeting should note a change of the normal date. It will Sunday 15 November (not the 8th - it's been moved to avoid a workshop clash).

Basement Welsh Chapel
90, Southwark Bridge Road
London SE1.

At the junction of Southwark Bridge Road and Marshelsea Road 1.00pm to 6.00pm.

Eindhoven

The next Eindhoven QL show will be held on January, 30th, 1999. We have no idea yet whether it will be a regular or international show - but the next QL Today will tell you in time.

The international show in October was very well attended, many dealers, many users. It was possible to see a Q40 running SMSQ/E! More in the next issue of QL Today.

Sorry that there is no assembler series article in this issue, Norman Dunbar has been out of the country and unable to prepare the article.

The QL News Email list run by JMS has been put on hold by his provider. Other lists have been abused by other people, the provider claims. They are thinking about a solution. As soon as it is going again, every subscriber will be informed. QL Today will keep you informed too!

My Life with Computers (including the QL Love Affair)

Joe Haftke

A bit of the author's computer history combined with his present view of the computing scene. Nobody knows what the future willbring us, but Joe explains his viewpoint.

The first time that I really encountered a computer was in 1955. I was 31 and everybody called me Joe, the computer had just been born and was called 'PEGASSUS'. I was five feet nothing, just as now, Pegassus was enormous!

It occupied a whole floor in a very large new office building in London, I just had a desk and a chair. I was busy designing bits of nuclear power stations with a team of others, Pegassus was trying to produce an occasionally correct company payroll, between frequent electrical and electronic breakdowns of its own and nervous ones amongst its very numerous team of highly paid staff.

Out of curiosity, I went on a short computer programming course.

Every single instruction had to be written longhand in binary, punched into a paper card by a punchcard operator, the cards then checked by another punchcard operator, wheeled on a trolley to the computer and read into it by a gigantic card reader.

At every step hundreds of mechanical, electrical and electronic (heated thermionic valves based) components were involved, as were millions of human nerves and brain cells.

The probability of any one of these breaking down at least once a shift was reflected by a number so high, that the computer could not handle it - it would crash with a severe case of overflow and much human insanity.

So in 1955 computers and I had not quite hit it off, but a few years later, an IBM replacement of the Pegassus, had transistors and solid state diodes instead of the thermionic valves and electrical relays. The incredibly high probability of a component failure had been reduced with a bump, but an even greater number now described the price and running costs of the mainframe machine.

The computer had become an essential working tool for many people in many different disciplines, including engineering.

It was, however, a tool that could only be operated by the users by double remote control, the computer supplier and the company's central computer department analysts and programmers. Both were fairly indifferent to the users' needs, very arrogant and expensive and totally dictatorial.

The seeds of rebelion were being sown, the users were dreaming secret dreams of being able to have access to computers and software that were under their own control, located on their desk, for them to operate as THEY saw fit.

Part of my own "patch" were some engineering departments, design and drawing offices and also, ironically, all the computer departments. This enabled me to install in one of the drawing offices a "Frieden" computer, the size of a big desk, programmed by engineering staff (via a wide punched paper tape) and costing about £15,000. It only did some jobs, but well and fast and people were enjoying using it! It was a whacking success!

When a little time later desk-top computers became economically available, most user departments in my division acquired some. They were being used directly by the users in many different disciplines with rapidly growing competence and enthusiasm.

The local computer had arrived in business use, but it was far too costly for personal use.

Then one day, our school-age, middle son arrived home with a Sinclair Personal Computer, the ZX81. He had bought it with his savings and loved it. One could write programs, save them (now and then) on cassette tape, save data files (now and then) and load them back in (now and then). It was fantastic, the fruit of Clive Sinclair's genius.

But quite typically, the little round plug and socket, connecting the power supply to this fantastic machine was fantastically floppy and sloppy and it was it, that governed how often and for how long you could use this little marvel. It also decided when and which files and programmes

were consigned to oblivion, without any warning!

It was truly a marvel (the ZX81, not its round power plug) and a promise of things to come, but in itself - a fascinating toy for all ages.

Our son helped me to use it and I found it fascinating (when it worked).

Then Sinclair launched the Spectrum. I bought one, loved its potential and started writing simple programs for it.

The Spectrum had a horrible rubber key keyboard and all the saving and loading was still to and from audio cassette tape and failure was never very far away.

Then transformation! You could buy a replacement keyboard, with decent keys and an interface that connected it and a miracle (note the lower case 'm') little box via a ribbon cable and little black cartridges that fitted into the slot in the drive box.

The microdrives had arrived and compared to their predecessors, the audio tape, they were fantastic for speed, compactness and reliability.

I scraped up the money and bought that lot and a word processing program (of sorts).

I now had a real computer and was able to write real and useful programs.

When a few years later the QL (eventually!!) appeared, I bought it of course and loved it. I used the bundled Psion software, upgraded my own programs from the Spectrum and wrote some new ones for my own use.

Over the years I bought the Miracle cards and floppy disk drives and more commercial software.

I was now a serious and well satisfied computer user. The QL was an absolutely essential tool in my private and professional life and I found it great fun!

In the meantime most of the western business world also discovered desk-top computers, but different ones - they were IBMs and IBM clones.

Compared to the concurrent QL they were very expensive, the software was very expensive and wasted much of the computer's capability on "domestic" chores.

Their Basic language compared to the QL SuperBASIC was agony, but their market was huge. Their capabilities were growing fast and their cost was dropping like a stone.

I still love the QL and use it all the time, but I also have and use a P.C.

I bought it a few months ago for the same price, as the total cost of my QL more, than ten years ago. Allowing for inflation my P.C. only cost me half the price of the QL, but look at what the price included:

200+MHz Processor
32MB of fast RAM
3GB of fast hard disk
CD ROM drive
High speed Modem
15" screen
Windows 95
Bundled Microsoft Office Professional 97. (Word, Excel, Access & PowerPoint)

If you can't lick them, join them!

I now have the QPC QL emulator (from Jochen Merz), running on the P. C. under SMSQ/E.

In my opinion, it is a very good QL emulator, its manual however, I believe to be the worst written that I have ever come across.

I still run a QL (with a Di-Ren interface & PC keyboard) and QPC on the PC.

I could now (only 12 months later) buy a PC for half the real cost of my QL setup with a 300 MHz chip, 128 MB of RAM & 6GB hard disk.

I know that nobody NEEDS all that and much of it is consumed by trimmings, but it costs next to nothing and is very pleasing and easy to use.

Times have changed more, than most of us, QLers have noticed, or will admit.

The QL SUPERBasic is far better, than the PC Basic for writing programs, but the current PC hardware and often bundled software (like MS Office) are streets ahead of anything for the QL. So why not give up "computer fanaticism", go back to logic and spend less money long-term by running a QL emulator on a PC.

I very much doubt if there is any significant future for new QL hardware boxes of any sort, they are available already cheaply from lots of shops in lots of High Streets all over the world and they can be used for all the things most of us do on the QL.

They are called PCs. All you need to add is a QL emulator. You can buy an adequate combination for under £200 (a 486 & QPC), but whatever you decide don't give up the QL system, or QUANTA, or the QL community!

■

USE with SMSQ/E

George Gwilt

The useful USE procedure (from DIY Toolkit) does not work in SBASIC daughter jobs of SMSQ/E, only in the "main" BASIC (job 0). Here is a way to get round this problem.

For the reasons given by Simon Goodwin in his DIY Toolkit the procedure USE can save time and errors. Many of my programs use it so I was dismayed to find that I couldn't run them on daughter SBASICs under SMSQ/E. The reason for this is that since each daughter SBASIC job and its channel 1 must have their own unique IDs the assumption in USE that these IDs are 0 and $00010001 respectively is not true except for the original BASIC.

To cure this problem I have added code which stores and replaces the required IDs for each separate program in an area called JB_SP. The first half of this contains the job IDs and the second half the channel IDs. A free space in this area is signalled by the low word of the job ID being negative (which can't happen for a real job). If USE is invoked more times than there is space available the error message 'buffer full' appears.

When a simple USE or USE 1 is given space allotted is released. However if an SBASIC in which USE is operational is removed, the space in JB_SP still contains an apparently valid job. Thus when there appears to be no space on a new USE request it is necessary to examine each job ID to make sure that it still belongs to an existing job. If it doesn't that space is, of course, released.

For those unfamiliar with USE I should explain that the procedure allows any specified channel to be taken as the default in commands such as PRINT and PAPER which default to channel one. Thus

```
PRINT#3,a$:PAPER#3,7:INK#3,0:PRINT#3,b$
```

could be written

```
USE 3:PRINT a$:PAPER 7:INK 0:PRINT b$
```

USE 1 or USE on its own will restore the original default. USE will accept a hash sign before the channel number but this is not necessary. Hence USE#3 and USE 3 both have the same effect.

The Assembly Code

The program to be assembled is given in Listing 1. This can be assembled by QMAC or by GWASS on a Super Gold Card or QXL, but not on a Gold Card. The listing contains additional code to implement the changes mentioned above. In very minor respects the original code has been altered. Registers D3 and D4 are substituted for D0 and D1.

The example given here allows for space for four different jobs. This can easily be altered to any other number up to 127 by changing the definition of N_Jobs to the new number and adjusting the DC.L instruction at JP_SP.(An as yet unpublished version of GWASS contains the directive DCB, which is already in QMAC, so that the DC.L instruction could be replaced by:

```
JB_SP
   DCB.L   N_Jobs,-1
   DCB.L   N_Jobs,0
```

thus enabling the space to be set automatically. If there is popular demand resulting from Norman Dunbar's articles on assembly programming the new version of GWASS will of course be released!)

Loader

For those not wanting or not able to use an assembler a loader is available via SuperBASIC in Listing 2. Since those wanting this version of USE will have SMSQ or SMSQ/E the program makes use of some of the extra facilities available. These are:

1. 'For' loops with an integer argument
   FOR x%= . . .
2. Hexadecimal representation of numbers
   $4E75
3. WPUT (a word BPUT) *

* Note that WPUT is available in SMSQ/E but not in SMSQ so the procedure at 2020 which is needed for SMSQ should be 'remarked' out for SMSQ/E.

The loader defines 'loader' as a procedure which will produce a file with any name you like to take the place of the assembled one. Just type:

```
loader 'ram1_use_bin'
```

and then:

```
lrespr ram1_use_bin
```

to install USE.

Listing 1 - Assembly Language for USE

```
* QL WORLD March 88 - USE  procedure
*        by Simon N Goodwin
*
*
*  ----------------------------
*  |        Version 2.1       |
*  |                          |
*  |   Altered  - 17th July 1998
*  | by George Gwilt for use with
*  |           SMSQ/E         |
*  ----------------------------
*
```

```
BP.INIT   EQU       $110
CA.GTINT  EQU       $112
BV.CHBAS  EQU       $30
BV.CHP    EQU       $34
MT.INF    EQU       0
SV.JBBAS  EQU       $68
JB.TAG    EQU       $10
N_Jobs    EQU       4
*
START     LEA       DEFINE,A1
          MOVE.W    BP.INIT,A2
          JMP       (A2)
*
DEFINE    DC.W      1  1 procedure
          DC.W      CH_USE-*
          DC.B      3,'USE'
          DC.W      0,0,0  No functions
*
CH_USE    CMP.L     A3,A5               Parameters? . .
          BNE.S     READ_CH             . . Yes
RESET_CHL MOVE.L    BV.CHBAS(A6),A1
          LEA       40(A1),A1
          LEA       JB_SP,A2
          MOVEQ     #MT.INF,D0          D1 = this job's ID
          TRAP      #1
          TRAP      #0
;
; Now in supervisor mode
          MOVE.W    SR,D7
          ORI.W     #$700,SR            stop interrupts
          MOVEQ     #N_Jobs-1,D2
L1        CMP.L     (A2)+,D1            see if this job in list . .
          DBEQ      D2,L1
          BNE       NO_ERROR1           . . not there so no action
          MOVE.L    4*N_JOBS-4(A2),(A1,A6.L)      reset #ID
          ST        -2(A2)              clear this item
          ANDI.W    #$DFFF,D7
          MOVE      D7,SR
;
; Now back to user mode
          MOVEQ     #4,D3
CLEAR_CHL ADDQ.L    #4,A1
          CLR.L     (A1,A6.L)
          DBF       D3,CLEAR_CHL
          MOVEQ     #80,D3
          MOVE.L    D3,4(A1,A6.L)
          BRA       NO_ERROR
*
* Read channel no -> D3
*
READ_CH   LEA       8(A3),A0
          CMP.L     A0,A5
          BNE       BAD_PARAM
          MOVE.W    CA.GTINT,A2
          JSR       (A2)
          BNE       BAD_EXIT
          MOVE.W    (A1,A6.L),D3
          CMPI.W    #1,D3               "USE 1" means reset
          BEQ       RESET_CHL
*
* Track down data in channel table
*
          MOVE.L    BV.CHBAS(A6),A1
          MOVEQ     #40,D4
*
* Check channel no in D3 and convert to offset
*
CHAN_SEL  MULU.W    D4,D3
          ADD.L     A1,D3
          CMP.L     BV.CHP(A6),D3
          BGE.S     WHAT_CHAN ---->
          MOVE.L    (A6,D3.L),D5
```

```
          BMI.S     WHAT_CHAN ---->
          ADD.L     A1,D4
          MOVEQ     #MT.INF,D0
          TRAP      #1                  A0 -> SYS VARS, D1 = JOB ID
          LEA       JB_SP,A2
          MOVEQ     #N_Jobs-1,D2        count
          TRAP      #0
;
; supervisor mode
;
          MOVE.W    SR,D7
          ORI.W     #$700,SR            stop interrupts
L2        CMP.L     (A2)+,D1            is job in list? . .
          DBEQ      D2,L2
          BEQ.S     CPY_CH1             . . yes, #1 already saved
          MOVEQ     #N_Jobs-1,D2        count again
L3        TST.B     -2(A2)              free space? . .
          SUBQ.L    #4,A2
          DBMI      D2,L3
          BPL.S     L6                  . . not yet
          ADDQ.L    #4,A2
          BRA.S     L4                  space found
;
; We must see if jobs in the list are current
;
L6        MOVEQ     #N_Jobs-1,D2
          MOVE.L    SV.JBBAS(A0),A0     pointer to job list
L5        MOVE.L    (A2)+,D6            Job ID in list
          MOVE.W    D6,D0
          LSL.W     #2,D0
          MOVE.L    (A0,D0.W),D0        pointer to job
          BMI.S     L4                  Job dead - so space found
          MOVEA.L   D0,A5
          MOVE.W    JB.TAG(A5),D0       current job tag
          SWAP      D6
          CMP.W     D6,D0
          DBNE      D2,L5               Are all jobs current? . .
          BEQ.S     NO_ROOM             . . yes - so no room
L4        MOVE.L    D1,-4(A2)           set job ID
          MOVE.L    (A6,D4.L),4*N_JOBS-4(A2)      set #ID
*
* Copy from offset D3 -> offset D4
*
CPY_CH1   MOVEQ     #9,D2
COPY_CH   MOVE.L    (A6,D3.L),(A6,D4.L)
          ADDQ.L    #4,D3
          ADDQ.L    #4,D4
          DBF       D2,COPY_CH
*
NO_ERROR1 ANDI.W    #$DFFF,D7
          MOVE      D7,SR
NO_ERROR  MOVEQ     #0,D0
          RTS
WHAT_CHAN MOVEQ     #-6,D0
          RTS
BAD_PARAM MOVEQ     #-15,D0
BAD_EXIT  RTS
;
NO_ROOM   ANDI.W    #$DFFF,D7
          MOVE      D7,SR
;
; -> user mode
;
          MOVEQ     #-5,D0
          RTS
;
JB_SP     DC.L      -1,-1,-1,-1,0,0,0,0
;
; JB_SP is a table of N_Jobs job IDs where USE is in operation.
; An entry with negative bottom word indicates a free space.
; The second set of long words is for the corresponding #IDs for
; the various channel 1s.
```

Listing 2 - Basic loader

```
100 DEFine PROCedure loader(a$)
110  LOCal x%,y,out%,l%
120  out%=FOP_OVER(a$):CLS
130  IF out%<0:PRINT "Can't open "&a$:STOP
140  RESTORE
150  READ l%
160  IF l% MOD 2:PRINT "Odd file length":STOP
170  l%=l%/2:sum=0
180  FOR x%=1 TO l%:READ y:WPUT#out%,y:sum=sum+y
190  READ checksum
200  IF sum-checksum:PRINT "Checksum failure - look at your data":CLS#out:DELETE a$:STOP
210  PRINT "File "&a$&" now ready"
220  CLOSE#out%
230 :
1000 DATA 320
1010 DATA $43FA,$8,$3478,$110,$4ED2,$1,$C,$355
1020 DATA $5345,$0,$0,$0,$BBCB,$664A,$226E,$30
1030 DATA $43E9,$28,$45FA,$FA,$7000,$4E41,$4E40,$40C7
1040 DATA $7C,$700,$7403,$B29A,$57CA,$FFFC,$6600,$C6
1050 DATA $23AA,$C,$E800,$50EA,$FFFE,$247,$DFFF,$46C7
1060 DATA $7604,$5889,$42B1,$E800,$51CB,$FFF8,$7650,$2383
1070 DATA $E804,$6000,$A6,$41EB,$8,$BBC8,$6600,$A4
1080 DATA $3478,$112,$4E92,$6600,$9C,$3631,$E800,$C43
1090 DATA $1,$6798,$226E,$30,$7828,$C6C4,$D689,$B6AE
1100 DATA $34,$6C7A,$2A36,$3800,$6B74,$D889,$7000,$4E41
1110 DATA $45FA,$7E,$7403,$4E40,$40C7,$7C,$700,$B29A
1120 DATA $57CA,$FFFC,$673E,$7403,$4A2A,$FFFE,$598A,$5BCA
1130 DATA $FFF8,$6A04,$588A,$6022,$7403,$2068,$68,$2C1A
1140 DATA $3006,$E548,$2030,$0,$6B10,$2A40,$302D,$10
1150 DATA $4846,$B046,$56CA,$FFE8,$672C,$2541,$FFFC,$2576
1160 DATA $4800,$C,$7409,$2DB6,$3800,$4800,$5883,$5884
1170 DATA $51CA,$FFF4,$247,$DFFF,$46C7,$7000,$4E75,$70FA
1180 DATA $4E75,$70F1,$4E75,$247,$DFFF,$46C7,$70FB,$4E75
1190 DATA $FFFF,$FFFF,$FFFF,$FFFF,$FFFF,$FFFF,$FFFF,$FFFF
1200 DATA $0,$0,$0,$0,$0,$0,$0,$0
1210 DATA $394E0C
2000 END DEFine
2010 :
2020 DEFine PROCedure WPUT(k%,z)
2030  REMark  ** This is needed for SMSQ but not for SMSQ/E **
2040  BPUT#k%,z DIV 256:BPUT#k%,z MOD 256
2050 END DEFine
```

Just Words' Spelling-Crib v1.00

review by Dilwyn Jones

Geoff Wicks has produced just what many people needed, a pointer driven Spelling Crib program. Being unhappy with the lack of this facility in most existing spell-checking software for the QL, Geoff set about creating Spelling-Crib.

Best news is that it's freeware - you can get a copy on floppy disk from Geoff at workshops for just one pound, for example, or you can get copies from PD libraries and freely copy it for your QL friends.

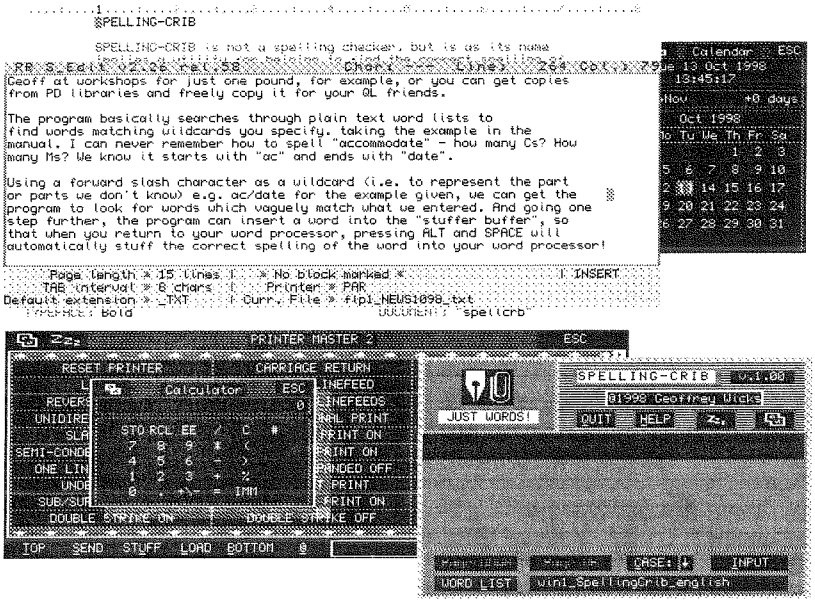
The program basically searches through plain text word lists to find words matching wildcards you specify. Taking the example in the manual: I can never remember how to spell "accommodate" - how many Cs? How many Ms? We know it starts with "ac" and ends with "date".

Using a forward slash character as a wildcard (i.e. to represent the part or parts we don't know) e.g. ac/date for the example given, we can get the program to look for words which vaguely match what we entered. And going one step further, the program can insert a word into the "stuffer buffer", so that when you return to your word processor, pressing ALT and SPACE will automatically stuff the correct spelling of the word into your word processor!

You can even specify whether the word is to be stuffed with a capital letter at its beginning if you wish to use it as the first word of a sentence, all in upper case, or all in lower case.

The dictionary itself is a simple ASCII word list of about 57,000 English words. Other language dictionaries can be used quite simply. Indeed, lists

available for Solvit Plus users originally can be used - lists for most European languages are available from PD libraries, or from Geoff himself. The longest word it can handle is about 23 characters long, enough in most cases I'd think!



The one proviso is that the word list has to be in sorted order. Spelling-Crib has a few connections with another program by Geoff Wicks - Solvit Plus 2 - and the wildcard word search routines are derived from that program.

This program is not a spelling checker as such (i.e. it does not scan whole documents), rather a little utility to help you with individual words when you can't remember their spelling. In the short space of time I've used this little program, I've looked up a few words I always have difficulty with, and already find myself starting to remember how to spell them, as I have to think about them during the course of using the program and get to see the right spelling so often that they start to sink into my brain, so I'm sure that in a small way this program is contributing towards the aim of improving my spelling.

Perhaps the main disadvantage of Spelling-Crib is that it uses uncompressed word lists. Used alongside word processors and probably something like QTYP or the Perfection SPELLCHECKER or even the older SPELLBOUND, you tend to use up a lot of memory. One of my systems has 4MB, the other has 8MB, so no real problem in my case, but on a 2MB Gold Card or 896K Trump Card, or an emulator configured for smallish memory you'd have to think of this memory useage quite carefully. The main program itself is only about 40K in length, but the word list supplied is almost 600K long.

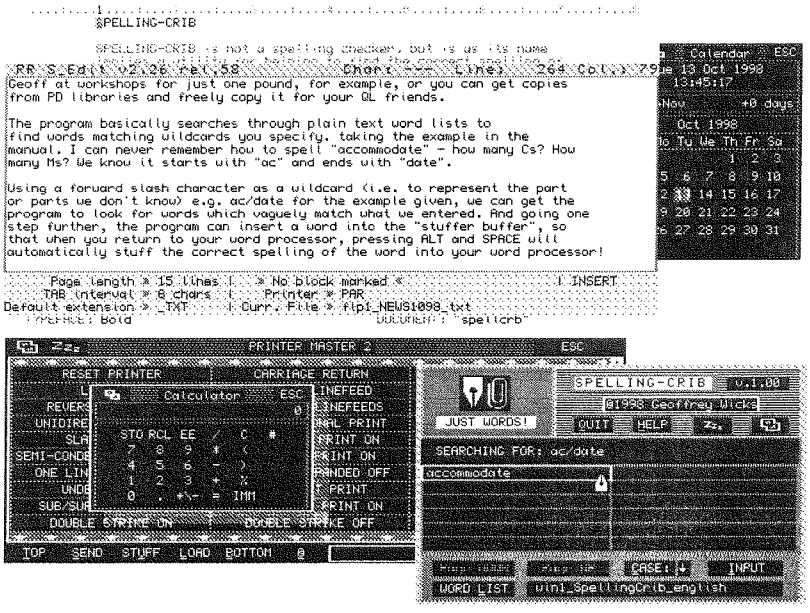
The manual is a 5 page _DOC file called SpellCrib_doc. This must have been prepared on Xchange, as it won't load into QL Quill (WP) as the body of the filename is 9 characters long (QL Quill uses DOS style 8+3 character filenames). Simply renaming the document file to be one character shorter cured this problem - it then loaded quite happily into QL Quill.

The program contains a short config block, which allows you specify the filename of the wordlist used. If you wish to change this on the fly (e.g. you wish to set up an English word list as your main file, but occasionally wish to load another language list, or even an American English version) you can start the program with a specified worlist file by passing its filename as the parameter in an EX command:

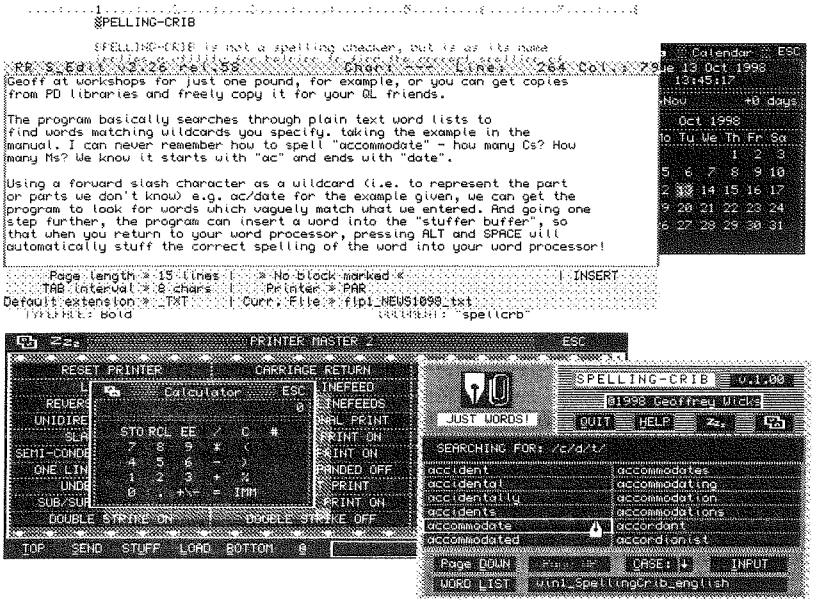
```
EX FLP1_SpellCrib_obj;'FLP2_English'
```

There is even a Word List command within the program allowing you to load other word list files.

In use, the program uses a fairly small display



window with the usual Just Words! logo of fountain pen nib and paper clip in one corner and a list of commands dotted about the display, with the central window used for listing words. It has a help screen built in, a button faciity for putting it to sleep, and a MOVE icon letting you move it about

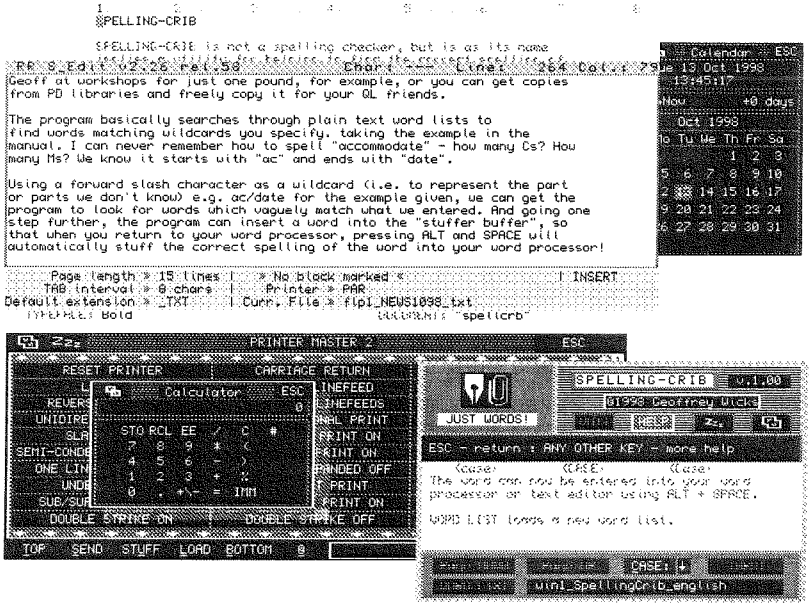


page of a search result, then press n for no when asked if you wish to quit, the search result list is not shown, but moving the pointer over the area where it used to be showed the item borders and appeared to work as though the list was there in fact. This may have been a bug and I will check this out with Geoff. In terms of general robustness, this program passed the test quite well. I'm usually the kiss of death for many programs when it comes to breaking this (Geoff knows this only too well!). I had difficulty breaking this one, so well done Geoff.

In the manual, Geoff hints as to what he'd like to do to develop future versions of this program, even suggesting the use of QTYP dictionaries if that proves possible. Geoff welcomes ideas for development of the program.

the screen. I'm writing this review on a QPC-enhanced 486 dx2/66 laptop with VGA (640x480) display. The editor I'm using (S_Edit) lives in a QL-screen sized area at the top left corner of the display, and there is still room for Spelling-Crib below it.

Given the speed (or rather, lack of) of the little laptop being used for this review, Spelling-Crib coped well with simple searches, almost instantly returning the results from the supplied dictionary. Complex searches using several wildcards, e.g. /c/d/t/ were handled successfully, but took 15 seconds before the first screenful of results appeared. The manual includes hints on speeding up the searches via careful use of the wildcards to avoid worst-case scenarios such as not specifying the first letter of a word such as I did in the example above. Obviously, it is hard to give specific examples of timings, as it will vary enormously from platform to platform.



One problem I found on my QPC setup was that if you accidentally hit Quit while showing the first

Well up to the standard of software I've come to expect from Geoff Wicks. Get a copy, you won't be disappointed with it.

Gee Graphics! (On the QL?) - part 7

How far is it part way around the ellipse ?

Herb Schaaf

First some comments about the previous article (GG#6)

My apologies to those true students of the history of mathematics for the mis-statements, errors, blunders, and distortions of the truth in the previous GG#6.

It was not the idea of the AGM that could have saved Legendre 26 years of work. Lagrange had published the idea of the AGM in 1775 and both Legendre and Gauss used it, although Gauss probably developed the idea more fully. The labor saving device was Neils Henrik Abel's revolutio-

Professional & Graphical Software

ProWesS

ProWesS is a new user environment for the QL. ProWesS is short for "PROGS Window Manager", but it is much more than that. Apart from a new window manager, it contains all the system extensions from PROGS, and is essential if you want to run programs which need these extensions.

The ProWesS reader is a major part of the package. It is a hypertext document browser. This means that text files which include formatting commands (including pictures) and possibly links to other files can be displayed and read in this program. This is used in ProWesS to read (and possibly print) the manuals, and display the help files. The hypertext documents which are used by the ProWesS reader are in HTML format, the format which is popular on Internet to display World Wide Web pages.

Another important aspect of ProWesS is the possibility to allow programs to automatically install themselves on your system, and to be able to run them without resetting the system. This means that, when you get a new program, all you have to do is insert the disk and indicate "start the program in flp1_", a menu option in the "utilities" button. To install a program, you indicate "install software", and the software can be added to your system. This way, you don't need to know how to write a boot file to use the multi-tasking capabilities of your computer.

ProWesS includes many programming libraries. These include syslib, an interface to the operating system, PROforma, a vector graphics system, allowing rendering both on screen and on paper (via a printer driver). The DATAdesign engine is also part of ProWesS. It is a relational database system with a bonus, as you don't even need a key field. You get a powerful record at a time data manipulation extension to the language you already use. Of course it also includes ProWesS itself, the new resolution independent window manager.

PFlist

Easy to use program to create listings on any printer (especially inkjet and laser). This ProWesS application allows you to indicate the files which have to be printed. Each column contains a footer which can include the filename and filedate. The listings always allow perforation. PFlist can create your listings in two columns and in landscape (or both).

fsearch

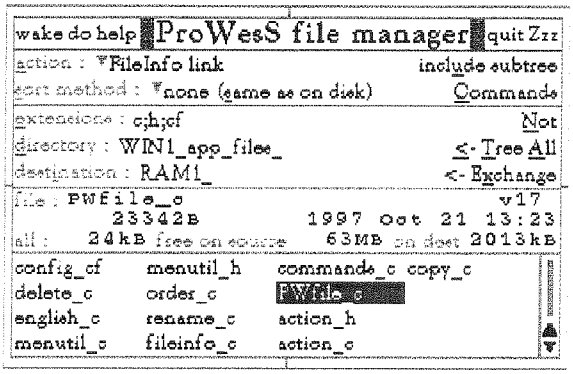
File search utility with many useful options, like the choice to search only files with a certain extension, and whether or not the directory tree has to be scanned. All occurences of the searchstring will be displayed with line number or offset. You can also use special matching features, like case dependent, matching a space with a stretch of whitespace, and searching for a word dilimited string.

font-utils

manage your font collection. You can preview fonts on screen, see what characters exist in a font and convert Adobe Type 1 and similar fonts for use in ProWesS.

New ProWesS application

a powerful and very user friendly file manager



LINEdesign

Create artistic drawings, technical drawings, process bitmaps (even scale and rotate them!), and any kind of vector drawings. You can use grpahics objects to create the most fabulous drawings ever seen. Because LINEdesign is a vector drawing program, any part of the picture can be moved, scaled, rotated, slanted without any loss of precision or resolution. In LINEdesign, pictures are device independant, meaning that the printout will be the same on any printer (e.g. same size and position).

LINEdesign is good at handling text. You can easily put titles and full paragraphs on the page. All the fonts can be displayed at any size, rotation, etc. All the fonts which are available to ProWesS can be used in LINEdesign.

LINEdesign is a drawing program, but it can also be used by people who are not good at drawing. LINEdesign is a great program for making leaflets, posters, and any kind of printed work. Lots of clipart and extra fonts are available from public domain libraries and BBS's. You can even import Adobe Illustrator files.

DATAdesign

Never before has it been so easy to create, fill in and maintain your personal databases. To start a new file, just type the names of the fields. To add or delete a field, no problem, just do it. To change the name of a field, just indicate it. You can choose which fields are displayed and also which records. You can have a hidden comment for each record, look at the file in tabulated form and transfer data to the scrap or hotkey buffer. Files can be memory based (for speed) or disk based (for safety).

new address !!

Dr. Fr. Hemerijckxlaan 13 /1
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tel : +32 (0)3/ 457 84 88
fax : +32 (0)3/ 458 62 07
email : joachim@club.innet.be
www : http://www.club.innet.be/~year2827

ProWesS - BEF 2400 DATAdesign - BEF 1200 PWfile - BEF 900 PFlist - BEF 600
LINEdesign - BEF 1200 fontutils - BEF 1200 fsearch - BEF 600

Payment terms :

You have to run ProWesS to make LINEdesign, DATAdesign, fsearch, fontutils and PFlist work (even though DATAdesign uses wman).

All our software is normally supplied on high density (HD) disks. However they can be obtained on double density (DD) disks at an extra costs of BEF 100. To use ProWesS and any of our other packages, you need a system with at least 2MB of memory. You should have a harddisk although a two disk system will also work. The use of SMSQ/E is strongly recommended for optimal use of ProWesS.

If you are VAT registered (specify registration number) or live outside the EEC, the amount to be paid is the total (including postage) divided by 1.21 (no need to pay too much).

Payment can be done by EuroCheque in BEF, or by VISA, EuroCard or MasterCard. Credit card orders can be handled by phone. For credit card, please specify name of card owner, card number and expiry date.

Postage : Costs of postage and packaging have to be added. You can choose the quality. Rate depends on no of programs.

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one	100	200	240	100	120	145
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3 or 4	160	560	770	160	310	395
5 to 8	185	870	1250	185	550	705
more	295	1130	1610	295	800	1030

All prices are in BEF, including 21% VAT

nary 1823 idea of inversion. Abel's idea was to study the amplitude as a function of the integral, instead of Legendre's way of treating the integral as a function of the amplitude. When this inversion idea was mentioned to Gauss, he indicated he had 'known it all along', and there is evidence in his unpublished papers that he had known. Legendre was glad to use the idea of inversion and to give credit to Abel. The romantic story about Gauss's rejection by the French Academy in W.W. Rouse Ball's "A Short History of Mathematics" was discredited by Eric Temple Bell in "Men of Mathematics".

Several approximations to the perimeter of the ellipse were mentioned in GG#6 (Peano 1887, Ramanujan 1914, Goormaghtigh 1930, Nyvoll 1978). For those who wondered what they were like, they can be found as SuperBasic FuNctions for comparison with the more accurate AGM method in the listing 'PerimEllipApprox_bas'.

Now as to the question posed for GG#7

To find the length along only part of the ellipse we use the incomplete elliptical integral of the second kind = E(k,phi). The k parameter is the eccentricity of the ellipse, while the phi parameter is an angular measure in degrees that needs some explanation. Take a look at the figure created by running the listing 'where_phi_bas'. The angle phi is represented by the angle BOQ measured from the semi-minor axis BO, about the center O of the ellipse, to a projected point Q on the circumscribing circle (having radius AO = semi-major axis); P being the point on the ellipse that is the same distance from the minor axis as the point Q on the circle is from the minor axis. In other words, Q and P both have the same x-coordinate.

I converted a FORTRAN procedure named "ELIT" into a SuperBasic FuNction ELIT(k,phi) which RETturns the incomplete elliptic integrals of both the first F(k,phi) and second E(k,phi) kind.

On page 270 in 'The Mathematical Gazette' of 1928 Alfred Lodge describes one way for producing nearly elliptical ovals using three circular arcs to form a close approximation to the quadrant of an ellipse. Load, read, and run the listing 'three_arcs_bas' to see one way of doing it. The notation is similar to that used by Lodge. By comparing lengths using ELIT with the lengths of the trial arcs we can adjust the radius and center point Y of the middle arc to find a 'close_fit' where the combined length of the three circular arcs very nearly approximate the length of the quadrant of the ellipse.

Next time I hope to get back to the basic graphic operations such as translation, rotation, and scaling of a tetrahedron described in arrays of points, lines, and polygons.

Listing "PerimEllipApprox_bas"

```
100 REMark PerimEllipApprox_bas
110 REMark HL Schaaf Oct 7, 1998
120 REMark perimeter of ellipse by various approximations
130 REMark compared with 'exact'  AGM solution
140 :
150 REMark Peano 1,2,&3, Ramanujan 1,2,&3, Goormaghtigh, Nyvoll
160 REMark as FuNctions (a,b)
170 REMark a = semi-major axis and b = semi-minor axis
180 REMark return total perimeter = 4 * elliptic integral of 2nd kind
190 REMark multiply AGM  by  4 to  make comparisons
200 :
210 WTV : MODE 4 : WINDOW 512, 256, 0, 0 : PAPER 0 : INK 6 : CSIZE 1, 0
220 :
230 REPeat  compare_approxs
240 a = 1
250 CLS #0  : CLS
260 REPeat  get_b
270 INPUT 'b from 0 to  1  ? ';b
280 IF (b>=0  AND b<=1) : CLS : EXIT  get_b
290 PRINT 'value out of range ! ( 0  to  1 )'
300 END REPeat get_b
310 k  =  SQRT(1-b*b)
320 CLS
330 PRINT 'a  = ';a, 'b =  '; b, 'k  = ';k
340 PRINT \'AGM  method'\,4*AGM_ellipint2(k)
350 PRINT \'Peano methods'\,Peano1(a,b)\,Peano2(a,b)\,Peano3(a,b)
360 PRINT \'Ramanujan methods'\,Raman1(a,b)\,Raman2(a,b)\,Raman3(a,b)
370 PRINT \'Goormaghtigh'\,Goor(a,b)
380 PRINT \'Nyvoll'\,Nyvoll(a,b)
390 PRINT #0;'[space  bar] for  another,  [ESC]  to  exit'
400 IF CODE(INKEY$(-1))=27: CLS#0: EXIT  compare_approxs
```

```
410 END  REPeat  compare_approxs
420 :
430 DEFine FuNction Peano1(a,b)
440 RETurn PI*(a+b+((SQRT(a)-SQRT(b))^2)/2)
450 END DEFine Peano1
460 :
470 DEFine FuNction Peano2(a,b)
480 RETurn PI*((3/2)*(a+b) - SQRT(a*b))
490 END DEFine Peano2
500 :
510 DEFine FuNction Peano3(a,b)
520 LOCal s, p2
530 s=(a+b)/2 : p2=a*b
540 RETurn (PI*2/9)*(19*s-4*((2*s*s+3*p2)/SQRT(s*s+3*p2)))
550 END DEFine Peano3
560 :
570 DEFine FuNction Raman1(a,b)
580 RETurn PI*((3*(a+b))-(SQRT((a+(3*b))*((3*a)+b))))
590 END DEFine Raman1
600 :
610 DEFine FuNction Raman2(a,b)
620 RETurn PI*(a+b+(3*((a-b)^2)/((10*(a+b))+SQRT(a*a+14*a*b+b*b))))
630 END DEFine Raman2
640 :
650 DEFine FuNction Raman3(a,b)
660 LOCal t
670 t = ((a-b)/(a+b))^2
680 RETurn PI*((a+b)*(1+(3*t)/(10 + (SQRT(4-(3*t))))))
690 END DEFine Raman3
700 :
710 DEFine FuNction Goor(a,b)
720 RETurn PI*((9/8)*(a+b)-(5/8)*SQRT(a*b)+(3/8)*SQRT((a*a+b*b)/2))
730 END DEFine Goor
740 :
750 DEFine FuNction Nyvoll(a,b)
760 LOCal t
770 t = ((a-b)/(a+b))^2
780 RETurn PI*(a+b)*(1+(t/8))^2
790 END DEFine Nyvoll
800 :
810 DEFine FuNction AGM_ellipint2(k)
820 LOCal i, k_comp, nth
830 REMark solves F(k) = complete elliptic integral of first kind
840 REMark RETurns E(k) = complete elliptic integral of second kind
850 REMark k is the eccentricity of the ellipse
860 IF k<0 OR k>1 : PRINT #0;k;' is out of range (0 to 1)':STOP
870 k_comp = SQRT(1-k*k)
880 DIM iter(3,1)
890 iter(1,0) = 1
900 iter(2,0) = k_comp
910 iter(3,0) = k
920 sum_of_terms = (2^-1)*(k*k)
930 nth = 0
940 REPeat converge
950  iter(1,1) = (iter(1,0)+iter(2,0))/2
960  iter(2,1) = SQRT((iter(1,0)*iter(2,0)))
970  iter(3,1) = iter(1,0)-iter(1,1)
980  sum_of_terms = sum_of_terms + 2^(nth)*(iter(3,1)*(iter(3,1)))
990  nth = nth + 1
1000  FOR i = 1 TO 3
1010   iter(i,0)=iter(i,1)
1020  END FOR i
1030  IF ( iter(3,0) < 1E-10 ) : EXIT converge
1040 END REPeat converge
1050 REMark ratio of second kind to first kind
1060 sec_to_first = 1 - sum_of_terms
1070 K_k = PI/(2*iter(1,1))
1080 E_k = K_k * sec_to_first
1090 IF k = 1 THEN
1100  REMark K_k is actually infinity
1110  K_k = 9.9E615 : E_k = 1
1120 END IF
1130 REMark RETurn K_k
1140 RETurn E_k
1150 END DEFine AGM_ellipint2
1160 :
1170 REMark  end of listing PerimEllipApprox_bas
```

Listing "where_phi_bas"

```
100 REMark where_phi_bas
110 REMark H L Schaaf Oct 6, 1998
120 REMark to go with Gee Graphics #7
130 :
140 WTV : WINDOW 512, 256, 0, 0 : PAPER 0 : INK 4
150 SCALE 2, -1.2, -.8 : CSIZE 1,0 : CLS
160 :
170 a = 1  : REMark keep semi-major axis = a = 1
180 REMark  b = semi-minor axis; any value >0 AND <1
190 b = .5
200 k = SQRT(1-b*b)  : REMark k is eccentricity of ellipse
210 :
220 REPeat  showhere
230 INK 4
240 CLS
250 AT 1, 2 : PRINT 'a = ';a, 'b = ';b, 'k = ';k
260 CIRCLE  0, 0, 1
270 ELLIPSE 0, 0, b, 1/b, 0
280 LINE 0, 0 TO a, 0
290 LINE 0, 0 TO 0, b
300 CURSOR 0, 0, -8, -4 : PRINT 'O'
310 CURSOR a, 0,  5, -4 : PRINT 'A'
320 CURSOR 0, b, -8, -8 : PRINT 'B'
330 REMark show one foci of ellipse
340 LINE k, 2E-2 TO k, -2E-2
350 CURSOR k, 0, 0, 2 :PRINT 'F'
360 REPeat get_phi
370  AT 3, 2 : PRINT '                  '
380  INK  6 : AT 2, 2 : INPUT 'phi ( 0'&CHR$(186)&' to 90'&CHR$(186)&' ) ? '\'
';phi;CHR$(186);
390  IF  phi >= 0  AND  phi <= 90  : EXIT get_phi
400  AT 4, 2 : PRINT "? range ? 0 to 90 ?"
410 END REPeat get_phi
420 AT 4, 2 : PRINT "Angle BOQ = ";phi;CHR$(186);'       '
430 E_k_phi = ELIT2(k,phi)
440 AT 5, 2 : PRINT "length of arc BP = ";E_k_phi
450 REMark find x  and y coordinates of Q on circle
460 Qx = COS(RAD(90-phi))
470 Qy = SIN(RAD(90-phi))
480 LINE  0, 0  TO Qx, Qy
490 CURSOR Qx, Qy, -4, -12 : PRINT "Q"
500 Px = Qx
510 REMark find y coordinate of P on ellipse
520 REMark  ((x^2)/(a^2)) + ((y^2)/(b^2))  =  1
530 Py = SQRT(ABS(1-(Px^2))*(b^2))
540 LINE Qx, Qy TO Px, Py
550 CURSOR Px, Py, -4, 8 : PRINT 'P'
560 IF Py THEN
570  BOP = DEG(ATAN(Px/Py))
580 ELSE
590  BOP = 90
600 END IF
610 AT 6, 2 : PRINT "Angle BOP = ";BOP;CHR$(186)
620 LINE 0, 0  TO Px, Py
630 INK #0, 4
640 PRINT #0; "[space bar] for another phi, [ESC] to quit"
650 INK  2
660 CIRCLE Qx, Qy, 1E-2 ; Px, Py, 1E-2 ; 0, 0, 1E-2 ; 0, b, 1E-2
670 IF CODE(INKEY$(-1))=27 : INK#0,4 : EXIT showhere
680 END  REPeat showhere
690 :
700 DEFine FuNction ELIT2(k,phi)
710 LOCal a, b, c, g, r, a0, b0, d0
720 REMark ELIT2 RETurns elliptical integral of second kind
730 REMark k is eccentricity, phi is in degrees
740 g = 0 : r = k * k : a0 = 1 : b0 = SQRT(1 - r) : d0 = RAD(phi)
750 IF k=1 AND phi = 90 THEN
760   FE=1E300 : EE = 1 : GO TO 1070
770 ELSE
780  IF k = 1 THEN
790    FE = LN(( 1 +SIN(d0))/COS(d0))
800    EE = SIN(d0) : GO TO 1070
810  ELSE
820    fac = 1
```

```
830    REPeat loop
840      a = (a0+b0)/2
850      b = SQRT(a0*b0)
860      c = (a0-b0)/2
870      fac = 2*fac
880      r = r + fac * c * c
890      IF (phi<>90) THEN
900        d = d0 + ATAN((b0/a0)*TAN(d0))
910        g = g + c * SIN(d)
920        d0 = d + PI*INT(d/PI+.5)
930      END IF
940      a0 = a : b0 = b
950      IF (c<1E-8): EXIT loop
960    END REPeat loop
970    ck=PI/(2*a)
980    ce=PI*(2 - r)/(4*a)
990    IF (phi = 90) THEN
1000      FE = ck : EE = ce
1010    ELSE
1020      FE = d/(fac * a)
1030      EE = FE * ce/ck + g
1040    END IF
1050   END IF
1060 END IF
1070 REMark RETurn FE
1080 RETurn EE
1090 END DEFine ELIT
1100 :
1110 REMark end of listing for where_phi_bas
```

Listing for "three_arcs_bas"

```
100 REMark three_arcs_bas
110 REMark H L Schaaf Oct 10, 1998
120 REMark to go with Gee Graphics #7
130 :
140 WTV : WINDOW 512, 256, 0, 0 : PAPER 0 : INK 4
150 SCALE 2, -1.35, -1  : CLS : INK #0, 4
160 eps =  1E-7 : REMark eps = epsilon = error allowance
170 a = 1 : REMark keep semi-major axis = a = 1
180 A0 = a
190 REMark choose the semi-minor axis = b
200 REPeat  get_b
210  INPUT "b ?",b
220  IF ( (b < 1) AND ( b > 0 ) ) THEN
230   EXIT get_b
240  ELSE
250   PRINT "? ( b > 0 ) AND ( b < 1 ) ?"
260  END IF
270 END  REPeat get_b
280 B0 = b
290 :
300 REMark k is eccentricity of ellipse
310 k = SQRT(1-b*b)
320 REMark length of diagonal AB
330 AB = SQRT(a*a + b*b)
340 REMark C = outside corner located at (a,b)
350 REMark  make line CX perpendicular to line AB
360 CZ = (b/a) * AB
370 AZ = SQRT(CZ*CZ-B0*B0)
380 Z0 = A0 - AZ
390 XZ = (Z0/AZ)*CZ
400 X0 = -SQRT(XZ*XZ-Z0*Z0)
410 BX = B0 - X0
420 REMark XYYZ = the sum of XY and YZ
430 XYYZ = BX - AZ
440 :
450 REMark X_R = XY and Z_R = YZ
460 REMark start with  XY = YZ
470 ratio = .5
480 REPeat close_fit
490  X_R = XYYZ * ratio
500  Z_R = XYYZ - X_R
510 :
520 REMark to find angle for arc BS = 0XY
```

```
530 REMark first find angles OXZ, YXZ; then angle OXY = OXZ - YXZ
540  OXZ = ATAN(ZO/-XO)
550 REMark solve for triangle XYZ
560 REMark with sides ZX, XY, and YZ use half TAN relation
570 REMark ZX = XZ, XY = X_R, YZ = Z_R
580  hss = (XZ + X_R + Z_R)/2 : REMark half sum of sides
590  rr = (((hss - XZ)*(hss - X_R)*(hss - Z_R))/hss)
600  IF rr›0 THEN
610   r = SQRT(rr)
620  ELSE
630   r = 0
640  END IF
650  YXZ = 2 * ATAN( r/(hss - X_R) )
660  OXY = OXZ - YXZ
670 REMark OXY has to be positive and less than OXZ !
680 REMark use length XY = XR and angle OXY to fix Y(x,y)
690 REMark Yx = x coordinate of point Y
700  Yx= X_R * SIN(OXY)
710 REMark Yy = y coordinate  of point  Y
720  Yy= XO + (X_R * COS(OXY))
730  Y_R = Z_R + AZ
740 REMark S is meeting point for arcs centered at X and Y
750  Sx=BX * SIN(OXY)
760  Sy=BX * COS(OXY)+XO
770 REMark now for angle OZY = OZX - YZX
780  OZX = ATAN(-XO/ZO)
790  YZX =2 * ATAN( r/(hss - X_R) )
800  OZY = OZX - YZX
810  AZT = OZY
820 REMark T is meeting point for arcs centered at Y and Z
830  Tx = COS(AZT) * AZ + ZO
840  Ty = SIN(AZT) * AZ
850  IF ((Sx›0) AND (Ty›0) AND (Yy‹0) AND (Yx›0) AND (r)) :diagram
860  ratio = ratio * (1-(EE-C3))
870  IF  (ABS(EE-C3))‹eps : EXIT close_fit
880 END  REPeat  close_fit
890 diagram
900 AT 22, 10 : PRINT 'close enough ?'\'   difference = ';EE-C3;' ‹ ';eps
910 STOP
920 :
930 DEFine PROCedure diagram
940 REMark set SCALE to show entire diagram
950 sc_ale = 1.1 * (b - XO)
960 SCALE sc_ale, -1.35*sc_ale/2, XO*1.1
970 IF sc_ale ‹ 2 : SCALE 2, -1.35, -1
980 REMark  show the QL ellipse in white ink
990 INK  6 : CLS
1000 ELLIPSE 0, 0, b, 1/b, 0
1010 REMark  back  to green ink for the rest
1020 INK  4
1030 AT 0, 1 : PRINT 'a = ';a, 'b = ';b,'k = ';k
1040 LINE 0, 0 TO a, 0 TO a, b TO 0, b TO 0, 0
1050 CURSOR 0, 0, -8, -4 : PRINT 'O'
1060 CURSOR a, 0,  5, -4 : PRINT 'A'
1070 CURSOR a, b,  5, -8 : PRINT 'C'
1080 CURSOR 0, b, -8, -8 : PRINT 'B'
1090 LINE ZO, 0 TO a, b
1100 CURSOR ZO, 0, 2, 2 : PRINT 'Z'
1110 LINE 0, XO TO ZO, 0
1120 LINE 0, XO TO 0, 0
1130 CURSOR 0, XO, -4, 4 : PRINT 'X'
1140 CURSOR Sx, Sy, -12, 0 : PRINT 'S'
1150 CURSOR Tx, Ty, 8, -4 : PRINT 'T'
1160 REMark show one foci of ellipse
1170 LINE k, 2E-2 TO k, -2E-2
1180 CURSOR k, 0, 0, 2 : PRINT 'F'
1190 CURSOR Yx, Yy, -8, -4 : PRINT 'Y'
1200 LINE Yx, Yy TO Sx, Sy
1210 LINE Yx, Yy TO Tx, Ty
1220 LINE Yx, Yy TO 0, XO
1230 ARC 0, b TO Sx, Sy, -OXY
1240 S_B = BX * OXY : REMark circular arc S to B
1250 bs1 = ELIT(k,DEG(ASIN(Sx)))
1260 BS = EE : REMark elliptical arc B to S
1270 SYT = ((PI/2) - OXY - AZT)
1280 ARC Sx, Sy TO Tx, Ty, -SYT
1290 T_S = Y_R * SYT :  REMark circular arc T to S
```

```
1300 bt1 = ELIT(k,DEG(ASIN(Tx)))
1310 BT = EE  :  REMark elliptical arc B to T
1320 ST = BT - BS :  REMark  elliptical arc S to T
1330 ARC Tx, Ty TO a, 0, -AZT
1340 A_T = AZ * AZT : REMark  circular arc A to T
1350 C3 = S_B + T_S + A_T
1360 FE = ELIT(k,90)
1370 REMark  EE  is  elliptical  arc B to  A
1380 AT 1, 1 : PRINT 'E(k,phi) = ';EE
1390 TA = EE - BT  :  REMark elliptical arc T to A
1400 AT 2,1:PRINT ' 3  arcs = ';C3
1410 AT 3,2:PRINT 'diff = ';EE-C3
1420 AT 4, 1 : PRINT 'BXS = ';DEG(OXY);CHR$(186)
1430 AT 5, 2 : PRINT 'radius XB = XS = ';BX
1440 AT 6, 2 : PRINT 'elip BS = ';BS
1450 AT 7, 2 : PRINT 'cir S_B = ';S_B
1460 AT 16, 1 : PRINT "X at ";'x = ';0;', y = ';XO
1470 AT 8, 1 : PRINT 'SYT = ';DEG(SYT);CHR$(186)
1480 AT 9, 2 : PRINT 'radius YS = YT = ';Y_R
1490 AT 10, 2 : PRINT 'elip ST = ';ST
1500 AT 11, 2 : PRINT 'cir T_S = ';T_S
1510 AT 17, 1 : PRINT "Y at ";'x = ';Yx \ '       y = ';Yy
1520 AT 12, 1 : PRINT 'TZA = ';DEG(AZT);CHR$(186)
1530 AT 13, 2 : PRINT 'radius  ZT = ZA = ';AZ
1540 AT 14, 2 : PRINT 'elip TA = ';TA
1550 AT 15, 2 : PRINT 'cir A_T = ';A_T
1560 AT 19, 1 : PRINT "Z at ";'x = ';ZO;', y = ';0
1570 AT 20, 2 : PRINT'XY/(XY+YZ) = ';ratio
1580 INK  2
1590 CIRCLE Sx, Sy, 2E-2 ; Tx, Ty, 2E-2
1600 CIRCLE 0, XO, 2E-2 ; ZO, 0, 2E-2 ; Yx, Yy, 2E-2
1610 PRINT  #0\\\,'touch [space  bar]'\,'for closer approximation'
1620 PAUSE
1630 CLS#0
1640 END DEFine diagram
1650 :
1660 DEFine FuNction ELIT(k,phi)
1670 LOCal a, b, c, g, r, a0, b0, d0
1680 REMark k is eccentricity, phi is in degrees
1690 g = 0 : r = k * k : a0 = 1 : b0 = SQRT(1 - r) : d0 = RAD(phi)
1700 IF ((k = 1) AND (phi = 90)) THEN
1710   FE = 1E300 : EE = 1 : GO TO 2020
1720 ELSE
1730  IF k = 1 THEN
1740    FE = LN(( 1 +SIN(d0))/COS(d0))
1750    EE = SIN(d0) : GO TO 2020
1760  ELSE
1770    fac = 1
1780    REPeat loop
1790     a = (a0 + b0)/2
1800     b = SQRT(a0 * b0)
1810     c = (a0 - b0)/2
1820     fac = 2 * fac
1830     r = r + fac * c * c
1840     IF (phi <> 90) THEN
1850       d = d0 + ATAN((b0/a0) * TAN(d0))
1860       g = g + c * SIN(d)
1870       d0 = d + PI * INT((d/PI) + .5)
1880     END IF
1890     a0 = a : b0 = b
1900     IF (c < 1E-8): EXIT loop
1910   END REPeat loop
1920   ck = PI/(2 * a)
1930   ce=PI * (2 - r)/(4 * a)
1940   IF (phi = 90) THEN
1950     FE = ck : EE = ce
1960   ELSE
1970     FE = d/(fac * a)
1980     EE = FE * (ce/ck) + g
1990   END IF
2000  END IF
2010 END IF
2020 RETurn FE
2030 RETurn EE
2040 END DEFine ELIT
2050 :
2060 REMark  end of listing three_arcs_bas
```

AURORA and me

To say nothing of MINERVA, and the Super Gold Card.

P.H. Tanner

Early this summer my first, and hitherto faithful, QL died. The still faithful, well that's how he was as of the last telephone call, Mr. Wood has replaced it with a MinisQL equipped with AURORA, SGC, SuperHERMES, and my existing RomDisq and MINERVA 1v97.

To explain how this lot has been organised, I must first describe the history of its late predecessor.

It began, as most entry micros did then, as an extension to my typewriter. But it was also intended as an introduction to 68000 programming, to explore the possibilities of continuing some of my activities into my imminent final retirement from "active" life.

I discovered the DP implementation of FORTH83. This used virtually the whole machine, so a second QL was purchased, dedicated to FORTH. I soon discovered that the BLOCKS in which FORTH programs are conventionally prepared were very dead ducks. I changed to input from named files. These files were created in the original machine.

Transferring by microdrive seemed ridiculous, so the alternative of using NET was tested. I say tested because the usual chorus of dismal jimmies raised their chant of "won't work : not worth trying". But it did work. It was worth trying. And from then on I was off. I tweaked the FORTH to read directly from NET, and the two separate machines, "master" and "slave", became a single entity.

I had a requirement to output function plots to my little 9-pin printer. This meant that somewhere the necessary memory had to be found to maintain a bit-mapped pseudo-screen within the slave. This was put together by maximising the amount of memory within the FORTH's dictionary and including the BLOCK buffer within it, by increasing the job's data space to the maximum that QDOS would allow me, and by making use of the screen RAM ("won't work" : "won't work").

Then the EXPANDERAM appeared, and the slave was immediately fitted with one of these glorious devices. 512k was added to the FORTH's dataspace, 440 of which were used to hold the image of an 8"x8" plot on the printer at maximum density. Shortly afterwards another of 256k was added to the master, which allowed me to make use of Master Spy. Bliss unconfined.

Came the MINERVAs, and I fitted one into each machine. I now had four screens available. In the master #1 became the screen on which the terminal emulation giving communication with the slave displayed. #0 was used for all other jobs such as M.Spy, and QUILL. In the slave, #0 showed the text output, while #1 was a graphics screen. That is points set in the bit-mapped printer image were echoed to a reduced picture on the v.d.u.

Once I had got them working to my satisfaction, I began to meddle. MINERVA provides the possibility of cutting the available RAM as seen by QDOS. It seemed to me that, although the memory above the cut could not be seen by the system, it should still be available as data space to one's own programs. So I restored FORTH83 to its original size, and cut the slave to give a basic 128k machine. Then the whole of the EXPANDERAM became available to FORTH as externally addressable space.

To my astonishment this resulted in a much happier and more responsive machine, although the job plus data space was occupying essentially the same areas of memory as before. It was much, very much, later that I discovered why.

But I was still dependent on the microdrives in the master for my non-volatile storage. That situation changed when my youngest descendant passed on to me this old '286 PC, which continues in use here. Its hard disc was immediately pressed into service with Mr. Barker's QL-PC Fileserver in charge of the traffic between master QL and the Intel machine. In many ways this was my ideal configuration, but ideals do not last long.

The slave QL was failing. So it was retired and, the QXL at last having become available, a 1Mb version was purchased to take its place. But I was faced with the sudden reduction of available QL screens from four to three (or two, depending on how the PC's screen was counted). A change in configuration was required.

Since the data store was in the PC it seemed logical to take all the data prep operations up there. The remaining QL became the QXL's display unit. The QXL itself was cut off from the PC bus so soon as it was booted, and it received its instructions from the QL by the same route as it wrote out its bytes for display: i.e. NET.

All keyboard I/O was now concentrated in the PC, including both the terminal emulation and editing functions. The QL-PC Fileserver was itself

retired, with not a little regret since it was, and no doubt still is, a most excellent utility, and after a brief flirtation with AMADEUS I bit the bullet and wrote my own programs linking PC and QL. Whereas previously file-structured transmissions had been used, I now went back to my origins and sent bytestreams, with the significant data marked by STX and ETX (^B and ^C). The transmissions were not blocked, well not by me, and were read straight into the data spaces of queues from which they could be read at leisure. I found that in this way I was able to achieve reliable communication at 19.2 kbaud, whereas before QL-PC was unhappy above 4.4, using the same cabling between the same machines. (I have subsequently discovered a possible reason for this, in that the VDISK :t parameter was left at its default value in the PC. A reduction might have improved matters. I have never looked at it, but my apologies to Mr. Barker should this have been the case).

The QL had but the one job running, which received data from the PC, and passed it on via NET to the QXL, when it awaited the result(s) which were displayed on one or other of the two MINERVA screens. Screen #0 was always used for text, and #1 for scratch messages, but more usually for "graphics", receiving points from the QXL which maintained a plot on the same 440k field as before. All ASCII characters sent to either screen were stored in the EXPANDERAM so that a complete log of all transactions during a session was available.

Then I purchased a new printer, which more than doubled the memory requirement for the printer plot. So Mr. Wood fitted a 4 Mb expansion to the QXL. When the card returned, it appeared to be 64k short. My querying of this resulted in the light dawning on one of my many areas of ignorance about QDOS. Possibly because I had always been a QFLASH user, I had the impression that the slave blocks were organised as linked lists. One of the reasons why I never bought a Trump Card was that I had read that the ram disks were static, pointed to from a fixed array.

Now I discovered to my shock horror that this fixed array was in fact the same one that was holding the slave block pointers. And therefore the 64k that I had "lost" was no more than the space required to map the extra memory that I had bought. Which is one of the absurdities of QDOS/SMSQ. Even if, as in this case, I have mopped up the whole available free space for my job, big brother is still watching it. And should, for instance, I do a DEL_DEFB, he visits all the elements in the array regardless of their targets no longer being any of his business.

Two things followed from this. The basic FORTH system plus dictionary took up 68k. The slave block pointers were never going to be used. So I moved FORTH down to overwrite their area, just above the top of the Supervisor Stack, thus releasing an extra 68k of contiguous memory into my external dataspace. And I now knew why my cut down QL went better. Since the system did not know about the EXPANDERAM, it did not have to map it. Or maintain the map.

A second QXL was added, to sit beside the first and allow the use of the 68040's floating point coprocessor. For the rest of this piece, this 8 Mb machine will be referred to as "FORTH", while the old 5 Mb one will continue to known as the "QXL". The two talk to each other over the NET, and the QXL, but not FORTH, remains in touch with the PC's bus. So that bytes to be saved from FORTH to the hard disk do not now have to be sent back over the serial link.

Which was the state of the system at the point when piggy-in-the-middle QL blew 4k of its screen RAM, and was retired. There follows a description of some of the programming effort involved in making its successor work.

Rather than give the listings of the boot and assembler files in single blocks, pointed to from the text, I shall use scraps of code at the relevant points where immediate reference may be made. There is, of course plenty of other code, but its existence must be inferred.

Since the replacement is a SGC with 4Mb of memory the opportunity has been taken to redistribute responsibilities between the machines. The first decision that needed to be made was the allotment of memory. The first line in the QXL boot file RESPRs 3 Mb for my buffers, leaving 2 Mb for programs. This was the case when the QL was completely occupied with its data transfer role. I hope that the SGC/AURORA will take some of the keyboard I/O load off the QXL. At present I have identified the limiting jobs as being FLP-CLONE plus the image of a High Density disc, or Master Spy with Roget's Thesaurus loaded. Either of these could be comfortably accommodated within a system size of 2 Mb. And by offloading them, I could increase the QXL's RESPR to 3.5 Mb, leaving 1.5 Mb to SMSQ.

[Sorry about the layout-change! Ed]

The SGC memory is split 50/50, 2 Mb to MINERVA, and 2 Mb to me. The first line in the boot file is therefore :

```
MODE 4:IF VER$(-2)<196608:call 390,
4+8+16+128+ 2*64*16384
tk2_ext
```

This checks the position of the System Variables. If they are lower in memory than they should be for second screen enabled, then the RESET code is called, with the parameters set for: "use memory limit bits"; "TV mode"; "don't wait for F1..F4" (this is ignored !); "enable dual screens"; "cut memory to 2 Mb". Note that the original QL value is given for the SysVars address : clever AURORA and SGC sort out the new value between themselves. TKII is not essential, but it is very convenient to have the use of the altkey assignments, and the DO files have their uses.

The next item is to install my own functions. Before I moved up into the PC I had an extensive list of home-brewed functions which were linked in to BASIC using all due ceremonial with BINIT, BVCHRIX, and I forget what else, all according to Cocker. When I came to set up the QXL, I felt that there must be an easier way.

QXL uses the EGA screen, and SMSQ leaves the original screen RAM vacant. This has more than enough room for my needs. So I have a file full of binary code, whose length I never need to know, which I LBYTES to $20000. And I then CALL $20000. The first item in the code is a small routine which moves the bytes up so that their top is at $28000, and then exits. At the top of code is a branch table pointing to the various subroutines. This can be accessed from the BASIC by specific CALLs, which may themselves be embodied in BASIC FuNctions or PROCedures. Thus :

```
DEFine PROCedure qview (x,y,z) : CALL
$27FF8, x,y,z : END DEFine
```

links my procedure "qview" into BASIC far more efficiently than I ever will, and without all that fiddlefaddle. And it has one enormous advantage. During development I can change the source for the functions, reassemble, and reload as often as I like - and BASIC never knows the difference.

I have brought this idea across to the new machine in which a check run showed that CALLed procedures work when they have been loaded into "external" memory, beyond the reach of QDOS. My own functions are therefore installed at the top of physical memory, $400000, in a similar manner to those in the QXL, but with one difference. I have other things going on in this area of RAM, so the installing routine leaves the address of the base of these functions in $3FFFFC, the topmost slot.

It is possible that I may change the position of the "cut" in my RAM, but I cannot change the top of physical memory, so the line to install my functions reads :

```
LBYTES flp1_omnibin_bin, 3500000: CALL
3500000
```

The number 3500000 has been chosen because it is well above the highest point that I am ever likely to place the cut, and it leaves plenty of space for any possible size of binary file.

I dislike the Sinclair sans serif screen font intensely. I have my own all-capitals font which I much prefer. It is very good for source editing, and general display, but hopeless for word processing. To get the best out of Master Spy I need a full 256-character font. Using, as I do, both PC and QL, I prefer to have the same ASCII character set in each, and that this should correspond with that in the printer. I have no idea how to change the characters on the PC screen. But I can alter the QL font using Mr. Goodwin's QLBODGE (what we all owe to that man!). So my characters in the ASCII range [128,255] are IBM, not QDOS.

Experiment showed that a font loaded into high memory is recognised, so the lines to install the font read:

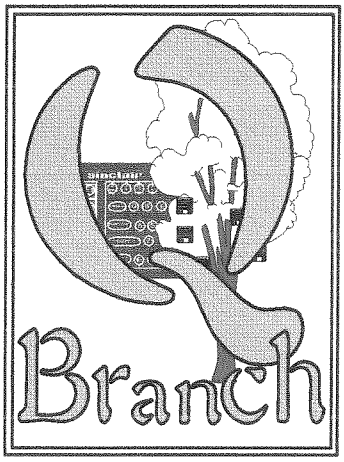
```
a = PEEK_L(4194300) - 2306 : LBYTES
rom1_alcibm,a : POKE_L 4194300,a POKE_L
!124!40,a : FOR i = 0 to 2 : CHAR_USE
#i, a, a
```

The top of available RAM is read from $3FFFFC, the length of the font module subtracted from it, the file itself loaded into memory, and the new top written back into $3FFFFC. Then the address of the new font is written into sx_f0, and applied to the existing windows. The same principle can be used for installing such other bits of binary code as may be needed from time to time.

Now to the fun bit. All my code written over the past decade assumes the existence of two screens. There are indeed two screens available in MINERVA/AURORA. But Screen0 is going to be needed for Master Spy and the other utilities. I shall only be able to use Screen1 for FORTH's display.

On a number of occasions in the past I have used an additional "screen" on an ad hoc basis. I have now made this a permanent arrangement. ‹CTRL›‹TAB› on the MINERVA keyboard triggers between the MINERVA screens: the same keystroke when executed from the terminal emulation in the PC swaps two FORTH screens in to and out of the MINERVA Screen1. The code for this is surprisingly simple.

Q Branch



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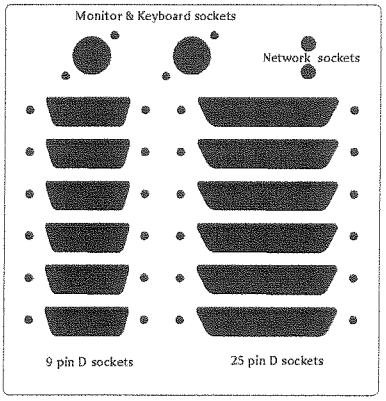

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Firstly distinctions must be made. The visible screen is the one which is being displayed at the location $28000. The active screen is the one to which the FORTH ASCII bytes are being sent. If the active screen is visible then the bytes are sent to base $28000; if it is not visible, then they are sent to the swapped out address of the specified screen. Since the origin of the bytes is only ever the stream coming down the NET from FORTH, there is only need for one window, which is swapped between screens as required.

So before leaving BASIC, there is one more little chore to be done. I never program in QL BASIC, and never need the listing window #2, well . . . hardly ever. So I use the #2 window for text output, and this, with everything else, goes to MINERVA Screen1. The line:

```
POKE_L (PEEK_L(PEEK_L(!!120)+8)+50), 163840
```

moves the #2 window on to Screen1. Think over it. This may be of interest to users of QL BASIC. I have always thought the F1 screen to be plain 'orrid. The alternative F2/MODE 4 with the #1 and #2 windows overwriting each other never seemed a particularly good idea either. However, if you move the #2 window to Screen1 like this, it then becomes possible to have full screen output and listing windows running in parallel, and visible at the touch of a ‹CTRL›‹TAB›You knew already? Ah Well.

›From now on I shall be concerned primarily with FORTH output, and SCREEN0 and SCREEN1 will refer to the FORTH screens being swapped in to and out of the MINERVA Screen1. Other windows will only show on SCREEN0, and will always be active, if not always visible.

All this is done by an EXECuted task, so that what follows will be extracts from the assembler file, not necessarily in their original order, but arranged to facilitate explanation.

Firstly there are three equates :

```
MIN1    equ     $00028000
SWAP0   equ     $00200000
SWAP1   equ     SWAP0+$8000
```

MIN1 is the base address of the MINERVA Screen1. As before it is the address as it would have been in a conventional QL, and AURORA reassigns it. I sometimes think that the authors of her software must have got bored with merely walking on water, and decided to try something more difficult. It's pure magic. SWAP0 and SWAP1 are the base addresses to which SCREEN0 and SCREEN1 are swapped out from MIN1, and are at the start of "my" memory, i.e. at SVRAMTOP as seen by AURORA.

Elsewhere in the code is what I suppose the hifalutin might call a stack frame. I have no name for it: it's just an area pointed to by a5, and it contains all the variables that are used by my task. Those which are relevant to the current discussion are :

```
AFIVE   dc.w    $0000           screen flags
SCRBZ   dc.l    $00000032       offset of SD.SCRB in #2 block
XYZ     dc.l    $00000022       offset of SD.XPOS in #2 block
XY0     dc.l    $00000000       saved cursor pos. for SCREEN0
XY1     dc.l    $00000000       saved cursor pos. for SCREEN1
NETWIN  dc.l    $00000000       store for netxfy ID
SCRBN   dc.l    $00000000       add of SD.SCRB in NETWIN block
```

If the upper byte of the word at AFIVE is clear then SCREEN0 is active else SCREEN1. If the lower byte is clear then SCREEN0 is visible else SCREEN1. At compile time SCRBZ and XYZ hold the offsets within the definition block for the #2 window of the variables given. When the task is installed, the base address of the block is added to them so that they become absolute addresses.

Since the #2 output is going to be switched between screens, it will need to know where the cursor is on each. A store is therefore provided for each cursor position.

There are several active windows on SCREEN0 beside #2. As an example I have shown NETWIN which displays information on the current use of NET. The others are written to by other tasks, but handled in a similar way.

When the task is EXECuted, these addresses are filled with their final values :

```
        suba.l  a6,a6
        lea     AFIVE,a5
```

As is my usual habit, I set a6 to zero as my first action - and keep it that way (yes I know that I have to save/restore the original value in the case of a CALLed subroutine: just don't ask how I found out). Then the absolute address of AFIVE is left in a5 - and also kept that way.

```
        movea.l $00030078,a4    SV.CHBAS
        move.l  $08(a4),d4      base of #2 block
```

```
        add.l   d4,XYZ-AFIVE(a5)        SD.XPOS
        add.l   d4,SCRBZ-AFIVE(a5)      SD.SCRB
```

The base of the channel table is moved in to a4, allowing that of the definition block to be located and moved in to d4. The absolute addresses of SD.XPOS and SD.SCRB are then fixed by adding d4 to the offsets already stored.

```
NETXFY  dc.l    $00000400,$006C000A,$001000F5
```

NETXFY is actually tucked out of the way at the end of the code, but I have put it here where it is more visible.

```
        lea     NETXFY,a1
        movea.w UT.SCR,a3
        jsr     (a3)
        move.l  a0,NETWIN-AFIVE(a5)
```

The NETWIN channel is opened, and its ID stored.

```
        move.w  a0,d6
        lsl.w   #$02,d6
        movea.l (a4,d6.w),a4        NETWIN channel block
        adda.l  #$00000032,a4       SD.SCRB
        move.l  #MIN1,(a4)          move it to MINERVA Screen1
        move.l  a4,SCRBN-AFIVE(a5)
```

The lower word of the ID holds the position of the window in the channel table. So this is extracted, multiplied by four, and applied as an offset to the base address of the table which we already have in a4 to obtain the address of the channel block itself. $32 is added to this to give the absolute address of SD.SCRB, and MIN1 is poked into it, thus moving the window from MINERVA Screen0 to Screen1. And this address is then stored at SCRBN since the startup condition is with SCREEN0 visible.

We are now ready for the routines to handle the two screens, first to swap then in or out of the visible position, and then to direct the #2 bytes to one or the other.

```
SWAPPIT
        move.w  #$1FFF,d0
SWOOP
        move.l  (a3)+,(a4)+
        dbf     d0,SWOOP
        rts
```

First a subroutine to move 32k from the block at (a3) to (a4). It would, of course have been possible to use the MINERVA MM.MOVE, but that would have involved juggling with registers, and I thought it better to avoid the possibility of error. Besides it was originally intended to take advantage of the move16 instruction. Very belatedly I realised that this was a 68040 feature, and not available to the 68020. What does the SGC manual say about sticking to the 68000 instruction set ?

Now to the main subroutine :

```
SWAPPER
        move.l  #MIN1,d4
        move.w  (a5),d5
        tst.b   d5
        bne     ONETOO
```

We need to know in which direction to make the swap. The lower byte of (a5) tells us which is the visible screen. If it is set then we are going to change from SCREEN1 to SCREEN0. While we are at it we save (a5) in d5, and take a copy of MIN1. Now the code to swap from SCREEN0 to SCREEN1 :

```
        movea.l d4,a3
        movea.l #SWAP0,a4
        bsr     SWAPPIT
        movea.l #SWAP1,a3
        movea.l d4,a4
        bsr     SWAPPIT
```

That's moved the images of the screens : now to do do the housekeeping :

```
        move.l  #SWAP0,d3
        tst.w   d5
        blt     SCRSWAPX
        move.l  d3,d4
```

We put into d3 the address of the screen to which NETXFY will be writing, and then into d4 the address of the active screen. This will be SWAP0 if the upper byte of d5 is clear, or MIN1 if it is set. And MIN1 is already the content of d4. And so to the postamble to the routine:

```
SCRSWAPX
        movea.l SCRBN-AFIVE(a5),a3
        move.l  d3,(a3)
        movea.l a5,a4
        eori.w  #$00FF,(a4)+
        movea.l (a4),a4
        move.l  d4,(a4)
        rts
```

The content of d3 is moved into SCRBN. a5 is moved into a4, and the lower byte of (a4)+ is flipped, which leaves a4 pointing to SCRBZ, and d4 is moved thither.

```
ONETOO
        movea.l d4,a3
        movea.l #SWAP1,a4
        bsr     SWAPPIT
        movea.l #SWAP0,a3
        movea.l d4,a4
        bsr     SWAPPIT

        move.l  #MIN1,d3
        tst.w   d5
        bge     SCRSWAPX
        move.l  #SWAP1,d4
        bra     SCRSWAPX
```

Swapping in the opposite direction is almost symmetrically opposite, apart from the treatment of d3, SCRBN requiring slightly different treatment since it must always track SCREEN0, active or not. But that should be clear from the code.

Lastly, to switch output from one screen to the other. Only the code for SCREEN0 will be shown since SCREEN1 is the exact opposite as only the text window is being switched :

```
SCREEN0
        move.l  #MIN1,d5
        movea.l a5,a3
        tst.b   (a3)+
        bne     SETSCR0
        rts
```

MIN1 is moved into d5 for convenience, and a5 is moved into a3. The byte at (a3)+ is tested. If it is set then SCREEN1 is active, and the subroutine proceeds, else it exits.

```
SETSCR0
        tst.b   (a3)+
        beq     SCROVIS
        move.l  #SWAP0,d5
```

The next byte at (a3)+ is tested. If that is set then SCREEN1 is visible, and the #2 bytes must be sent to SWAP0, so MIN1 in d5 is overwritten by SWAP0.

```
SCROVIS
        movea.l (a3)+,a4
        move.l  d5,(a4)
        movea.l (a3),a4
        move.l  (a4),XY1-AFIVE(a5)
        move.l  XY0-AFIVE(a5),(a4)
```

a3 is now at SD.SCRBZ so that its content is moved into a4, and that of d5 poked in to it. a3 was incremented by this action so that it now points to XYZ, and this address is moved into a4. a4 holds the current cursor position of SCREEN1, which must be saved to XY1, and lastly the value that has been stored in XY0 is poked in to (a4).

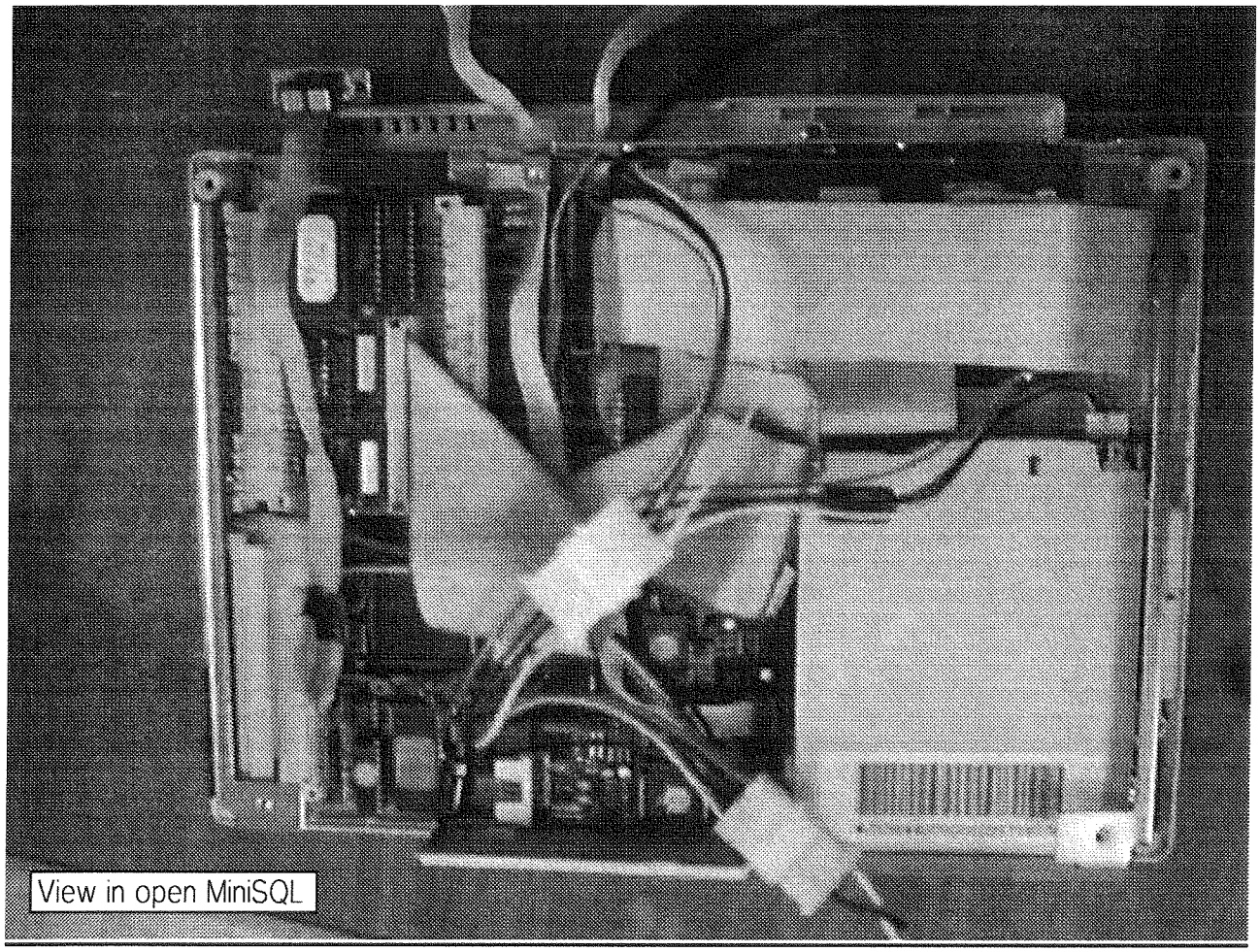
```
ETSCRZ
        eori.b   #-$01,(a5)
        rts
```

Finally, in a postamble common to both SCREEN0 and SCREEN1, the byte at (a5) is flipped, and the subroutine exits.

A decade ago, when I first tried this screen swapping business, I was definitely a member of the "won't work" tendency myself. At the very least I expected to have to slip into Supervisor Mode while doing it. But as time passed, and I began to add little extras, each time without fuss, I became less anxious. Nevertheless there remains a feeling that things are never this easy with QDOS. There must be a catch somewhere.

Perhaps SMSQ might be less forgiving. All I can do is to report that when launched into the environment specified at the top of this piece the code as I have described it flies.

I can watch a histogram growing on SCREEN1 secure in the knowledge that the associated numerical tables are being written to SCREEN0, and will be available to me at the flip of a keystroke. And I can work away on the MINERVA Sreen0 with TEXT87, or Master Spy, changing to Screen1 whenever I see the NET indicator light blink, telling me that something has come up from FORTH.



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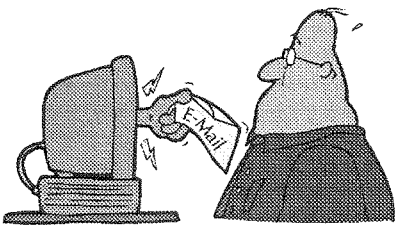

W.P.J. Baily writes:

I received my copy of QL Today (Vol. 3; Issue 3) only yesterday and as usual I started reading it immediately. I always find several things of great interest, hence my eagerness to see what is in each issue as I get it.

On this occasion, while reading Jochen Merz's article "The Year 2000 Problem" I noted that he indicates a problem with the QDOS system occurring in February 2097. With my system the problem would seem to occur much earlier. Using the Minerva ROM (alone or with TK2 loaded) the limit for a date number seems to be 2^(31)-2

for which DATE$ gives " 2029 Jan 19 03:14:06"; with SMSQ/E loaded the date number limit is 2^(31)-1, but who is worried about one second! Higher values for date number give an "overflow" error. (See also the last paragraph in my note in Quanta Magazine, Vol. 14., Issue 9. October 1997). Whether the problem is in the handling of DATE or the conversion to DATE$ seems to me to be immaterial; for all practical purposes DATE$ will be used. Can anyone comprehend quickly that integers between 1189987200 and 1190073600 - or 1.189987E9 and 1.190074E9 represent some time during 17th September, 1998?

Am I missing something? Are there differences between Minerva and QL ROMs and between these and QDOS emulators on other hardware? (I could test JS and JM ROMs but I am not inclined to take the case apart just for this!). As I noted previously, I doubt that I will be concerned at the the limit but I hope others will be! Long live the QL!

Jochen Merz replies: first a confirmation of the integer date- it is the 17.9.1998. Can we discuss the year 2029 problem in 2025 please? If it is still a problem then, then I'm pretty sure SMSQ/E can be told to handle the negative bit in a way to give us another 40 years. ï

Frank Davis of FWD Computing writes:
QL ROM Copyright

I just got the latest issue of QL Today. I find it misleading the way that you told readers that Amstrad had given permisssion for their copyrighted QL ROMs to be used in emulators. They do not, and never have had, any Sinclair rights, patents, copyrights or trademarks for North America. Paul Holgren, and I, Frank Davis, hold those rights here. We have not given such permisssion to anyone but Al Boehm and Nazir Pastoon to use QL ROMs in an emulator here in North America.

When Sir Clive sold out to Amstrad he did not sell them the rights for North America (nor did they get the rights to membranes and microdrives in Europe). Those rights at that time resided with A+ Computers of the USA, and via Tom Bent were sold to Paul and myself. This info was at one time part of the Sinclair FAQ and to my last knowledge was still in there.

At this time we DO NOT give permission for the use of QL ROMs in emulators in North America. We will probably give permission if the writers of these emulators approach us and ask for permission. They must ask. This is only courtesy, and so far it has not happened. While I admire the creativity of the software authors who wrote the emulators, I do not admire their lack of protocol.

We do not have any say over SMSQ (or its derivatives) or Minerva as they are sufficiently different as to not encroach upon our copyrights. All that came before them (and any new with the "Look and Feel" of them) are covered under USA and International laws dealing with patents, copyrights and trademarks.

I do not feel that wanting someone to ask for permission to use them is out of line.

P.H. Tanner writes:
GWASS

It is ever my misfortune to be misread. Some four years past I sent a manuscript to the then editor of Forthwrite, and omitted to supply a title. It appeared under the heading 'Through a glass darkly'. Mortified, so I was. And here - it's happened again.

In the issue of March/April 1998 both Messrs. Huyg and Wood commented on their problems with the redirection of output files under SMSQ. In the next number I myself wrote, attempting to support them by reference to my own similar difficulties. Perhaps incautiously I referred to the GWASSembler.

Now, in the Sept/Oct issue, Mr. George Gwilt has written. He says that his assembler reads the filename, and takes action accordingly. The problem is that it doesn't just act on the file name, but on the file specification, i.e. path+name. It was this question that the three of us, well two with myself acting as a sort of Greek Chorus, were attempting to discuss.

By way of example: if I ask the assembler to compile test_bin from test_asm, how do I force test_lst to be written out down a different path from that specified by the _asm file?

Everything that Mr. Gwilt writes is absolutely correct, but it does not address our difficulty.

This gives me the opportunity to put in a plug for the GWASSembler, which is in daily use at this site. It shines out as a good deed in a bad world: so long as G.G. continues to turn out software like this he can misread me as much and as often as he likes, and I shall count it a privilege.

Phil Stokes writes:
Enhance, not just change

Having eagerly ripped QL Today out of its packaging on walking in the door after work, I sat down and read it cover to cover. I was literally gobsmacked to hear some of the changes to our beloved QDOS

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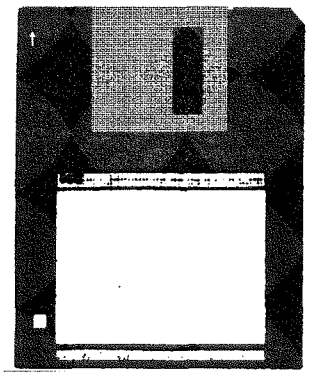
Further details from the Membership Secretary



Bill Newell
213 Manor Road
Benfleet
Essex
SS7 4JD
Tel. (01268) 754407

(etc) some people are crying out for; such as changing the QDOS file separator '_' for '?!?*' - have they no idea of what such incompatibilities can cause? I am probably what most "users" would describe as a "tinkerer", i.e. I write programs in my own limited time for my own amusement ("how selfish!" I hear you cry). In our house we have 2 QLs; (i) AH, Trump Card & dual DSDD drives (ii) Minerva RTC 1.97 (ex JM), Gold Card, RomDisq, 4 ED drives

I do not use "hard" (level 2) sub directories, but have used "soft" (original) ones for many years, because the old ones work fine, e.g.

DIR mdv1_data_.

Note with TK2 displays all files beginning with "data_", i.e. a subdirectory. This will work with both systems, but use "MAKE_DIR" and a disk (note: will not work with microdrives on either system) will become useless on system (i)

Another point from "Byts Of Wood" is this wish for programs to "Autoinstall" into a "standard format". What standard format? I can see a point to being able to put a disk in FLP1_ and press F1/F2 and it working. In fact I LIKE programs which can do this and think a "BOOT" file should consist of "10 EXEC flp1_prog", but why not have a "clone" programme which asks the user to type a subdirectory name in (if he/she wants one?) and a device name. This requires:

(i) No standard format so we can all arange our filenames in whatever idiosyncratic manner we like.

(ii) Whatever device we feel we want to use.

(iii) Programmers, users and anyone else to run their own computers how THEY want to.

Incidentally, my current "pet" project at the moment is a file/job management programme written in SuperBASIC which puts itself to sleep when you are using another job and it has no background job to perform, load jobs by "selecting" a file from a list, run in mode (users choice), be started by EXEC (when compiled) or by typing its name, has user configurable defaults within or without etc etc which I may let you lot get your hands on (if you want it of course)?

Remembering of course that with a QL you can use it how YOU want! (as it is now, but if certain people who always seem to be nameless get their own way then may not be for ever!) We don't want changes, we want enhancements.

P.S. Food for thought is it not?

Readers, how do you feel about this? Do you agree with Phil's viewpoints, or would you rather go the route being promoted by people like Roy Wood and Joachim van der Auwera? I feel this might be a controversial subject - why not write in and explore these issues to see just how we want the QL to go forward. - Editor

■

Financial Climes

Unregistered Version - A Software Review

Darren D. Branagh

"I'll have another £10,000 worth of Bowls-Boyce Cars, and while you're at it, give me five grand of Floyds Assurance too, I'm feeling lucky...."

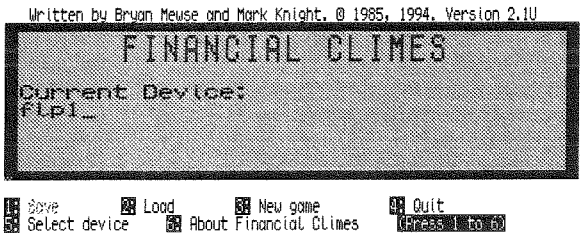
Suddenly, I realise I'm not on Wall Street but still in my bedroom playing Financial Climes on my QL - Bummer!!

Financial Climes is a Stocks and Shares simulation game, written for the QL jointly By Mark Knight and Brian Mewse. It started out life on the Sinclair Spectrum in 1984 by Mark, before Brian wrote a QL version in 1985, and the pair teamed up to bring us the present version many years later.

Firstly, a major gripe. Financial Climes refused to load at all on my QXL machine. Admittedly, I did try it first in VGA mode, and maybe I thought that was pushing it a bit, but I even tried it in EGA mode and Standard QL resolution of 512x256, but it refused to work every time in ALL the available modes of the QXL - it began to boot, then the word "Loading..." appeared in the top left of the screen, but a few seconds later the cursor was flashing alone in the bottom left corner, when the inital menu screen should have been displayed. I even tried booting it directly from the disk i.e. bypassing my own BOOT program in case there was something in there it didn't like, but still no luck. Ah, well - time to dig the old black box and Trump Card out from under the bed.....

Having set up my JS Rom QL and Trump Card and Twin Drives again (the things I do just for a review!!) I inserted the disk in FLP1_ and booted it. It worked first time, no problem at all. The QXL problem needs addressing, though - this is my main machine now. I'm assuming the same thing would also happen on a QPC system (maybe Aurora too?) as I think it is the screen resolutions that it has problems with, not just the QXL - I could be wrong though.

Fig. 1



Anyway, now we were up and running. On loading, the screen is all black except for a red box taking up the bottom half of the screen. This contains the prompting questions etc, on configuring the startup i.e. the names of players, skill levels etc. The bottom of the screen contains the commands available - on booting, these consist of:

1:Save
2:Load
3:New Game
4:Quit
5:Select Device or
6:About Financial Climes.

Pressing keys 1-6 selects an option. Save will save a game, to be reloaded and continued later (a useful feature I found; as a game of Financial Climes can last a while) Load will load a previously saved game, New Game and Quit are self explanatory, Select Device will allow you to change the default device for files, i.e. the startup default is FLP1_ but this could be easily changed to WIN1_ for instance, to accomodate hard drive users. 6 is the most innovative feature though; it displays a host of information and help screens, from a short menu.

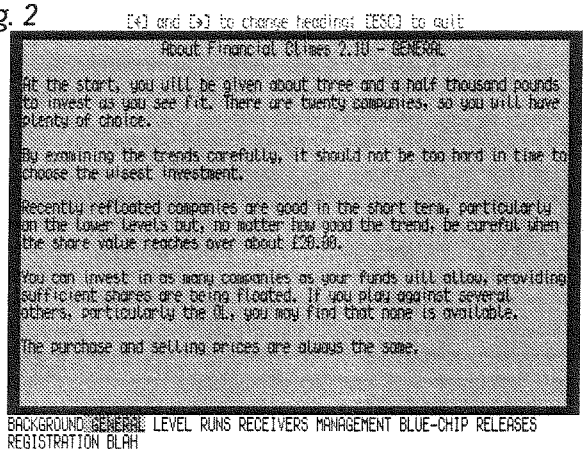
About Financial Climes

Choosing the "About Financial Climes" option (by pressing key 6) calls up a mini-manual from within the program. The menu on the bottom of the screen then changes to display the following items:

BACKGROUND,
GENERAL,
LEVELS,
RUNS,
RECIEVERS,
MANAGEMENT,
BLUECHIP,
REGISTRATION,
and BLAH.

Using the left or right allow keys will highlight an option and display the relevant information on the screen. For Instance, Background displays info on the history of the program, as I briefly outlined above, while selecting "BLUE-CHIP" or "RUNS" will display info on these financial buzz-words - a blue chip company being a company that has a stable background and whose share prices always remain firm these would be considered the better long term investments.

Fig. 2



Starting a New Game

So, back to the main menu we go (by pressing ESCAPE) and select item 3: New Game. On selecting 3 you will by asked "Are you Sure?" before proceeding. After this, you are asked for the number of players (1-6), The players' names, wether you want the computer to play for anyone, the number of Turns (i.e. basically how many game "weeks" the game will last, from 5 to 78 - these are not real time weeks!!) and also the skill level of the game, from 1 to 5.

Next, after a small musical BEEP the main gameplaying screen is displayed. This consists of a nice colourful bar-graph at the top of the screen (see screenshot) with all the twenty companies current share values presented upon it. At the very bottom of the screen is a small menu of gameplaying activities, while directly above this in a bright red window are the names of all twenty companies - the number beside each of these corresponds to the numbers on the bar-graph above, so following a particular company's performance is extremely easy. (see figure 4 on the next page).

Playing the Game

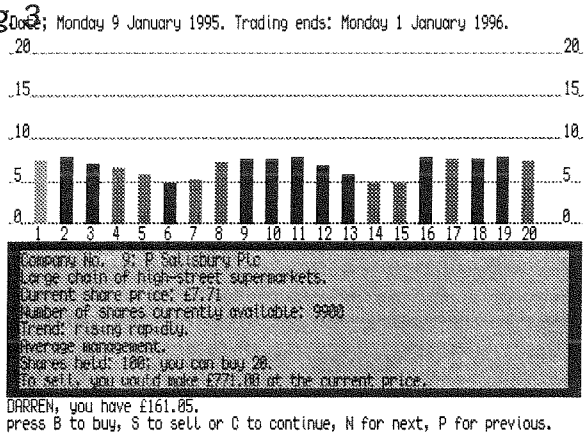
Ah, now the nity-gritty. The by now all too familiar menu at the bottom of the screen has the following options:

1: Company Report; Buy or Sell Shares.
2: Examine Holdings
3: Stock Market Report
4: End Transactions
5: Files

This is where things begin to happen, so let's take each of these options one by one:

1. Company Reports, Buying and Selling

Fig. 3



This is selected by pressing 1, and then offers you the option of selecting a company - this is done by simply keying in the number of the company (the number that corresponds to the bar-graph, as mentioned earlier) which will pull up a brief rundown of vital info on the company called a company report. This consists of the nature of business of the company, current share price, if the shares are rising or falling, and the amount of shares available on the market. Once this is presented, you have the option of buying or selling some or all shares (bu pressing B or S in each case) or C to continue, or N or P to move to the Next or Previous company in the list of twenty available.

For instance, buying some shares - press B, and the QL will tell you how many you currently own (if any) and how many you can afford to buy based on your current available cash which is always displayed on screen.

2. Examining Holdings

Selecting this presents a list of all twenty of the companies, and how many of each companys' shares you hold, and if you have lost or made money on your purchases. All the companies in which you have a stake are highlighted for ease of indentification.

Fig. 5

COMPANY	SHARES	VALUE	CHANGE
1: Raker Airlines	50	434.00	Up 48.50
2: Onion Books	0	0.00	none held
3: Rowdi Cars	5	34.00	Down 0.50
4: Tulip Electricals	0	0.00	none held
5: Al Fresco	0	0.00	none held
6: Admiral Computers	25	209.00	Up 30.75
7: I.C.B.M.	0	0.00	none held
8: Sea-Rank Ferries	0	0.00	none held
9: P Salisbury	0	0.00	none held
10: Silver Spur	0	0.00	none held
11: International Alchemy	2	18.10	no change
12: Slick Oil	25	203.00	Up 6.25
13: Stewing Oil	0	0.00	none held
14: Bowls-Bouce Cars	0	0.00	none held
15: Floyds Assurance	150	1117.50	Up 367.50
16: River Motor	0	0.00	none held
17: Phil McCavity	0	0.00	none held
18: Hover-Slough Ferries	0	0.00	none held
19: Gannet Books	300	2667.00	Up 393.00
20: Gutt, Rott	0	0.00	none held
HOLDINGS	TOTAL:	4683.60	Up 845.50

Press ENTER to return to main menu

3. Stock Market Report

This reveals the same list of companies as above, but this time has the current available number of shares, the current share price for each, and the change in each share value either the amount the share price has risen, fallen or "no change".

4. End Transaction

This simply ends all of your transactions for the current "week" and passes the control of the game to the next player if there is one (the QL can count as a player if you wish), or simply advances to the next week if you are playing alone.

5. Files

This returns you to the original menu, with Load, Save and Quit options, and also to the Help pages via "About Financial Climes" should you want to check anything during a game.

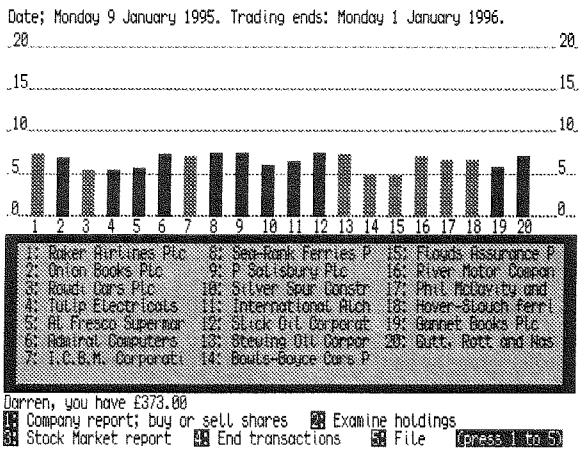
And that's about it.

Releases and News

The game however, is not as open and shut as that. It adds to the fun by giving you sneak reports on company releases to help you. i.e. Between transactions stuff like "Raker Airlines produce new luxury aircraft that seats 400" or "Rowdi Cars Plc produce the PendlePine - a fully computerised, digital driving masterpiece." It is then up to you to decide if these jewels of information will send the share price rocketing, or put the company into receivership. If you should Buy or Sell (see figure 6 on the next page).

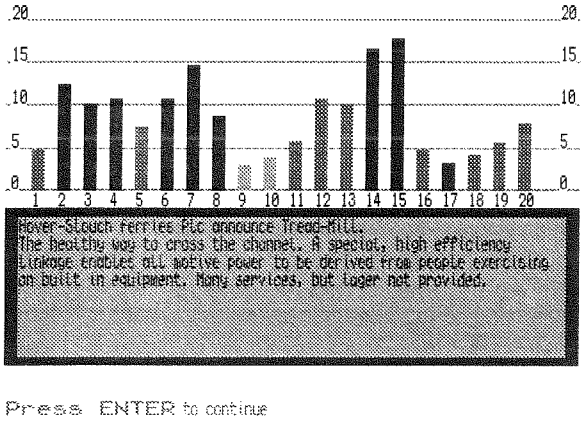
This is further added to buy some newspaper-like snippets that also appear, such as a Motoring Magazine might report that the PendlePine is useless and handle dreadfully, which of course could also

Fig. 4



have an effect on the share price. The simulation ends when all the set number of "weeks" have been transacted through, with the winner being the one with the most money (Bill Gates eat your heart out)!!

Fig. 6



The Shareware Concept

Now, this is important - unlike all the other software I have reviewed so far in QL Today, Financial Climes is NOT public domain software - it is SHAREWARE. This is for those of you that think it's the same thing - it very definitely ISN'T. The concept of Shareware is that an author produces a cut down (but working) version of his program and makes it available via the software libraries for the usual copying fee. If you obtain and decide to keep and utilise the product you MUST register it - a £11 fee in the case of Financial Climes, or £10 with a Blank disk. For this fee, you get a vastly larger game - 200 companies instead of 20, with 12 releases per year instead of just 3 in the unregistered version, among other extras, such as a fully-printed manual.

The Negatives

On the Negative side, I would like to see a version that works with my QXL - in ANY resolution, I couldn't get it to work at all. As the majority of QL'ers are moving into one or other of the new high resolution platforms, such as QPC, QXL, Atari Emulator, on the Aurora, I think it's crucial that all programs work on them - even in low resolution 512x256 normal mode. I also disliked the fact that FC would not multi-task, i.e. I couldn't run other programs, or Ctrl-C out of it, mainly due to the fact that it needs an EW or EXEC_W command to start it as the sole task, as EX or EXEC will not work. This was a little awkward, especially when trying to obtain the screenshots for this review using Dilwyn's SCREEN SNATCHER program - The QL locked up several times when saving a screenshot to disk as a result. Hopefully these problems can be eliminated in a later version - This review copy was given to Dilwyn by Mark himself, so there is no doubt of it being out of date - it is version 2.1U.

The Positives

On the plus side, I must say I enjoyed Financial Climes, despite the initial problems, and when Dilwyn sent me this copy for review, I didn't think I would. To describe it simply as a "game" is an insult - It is a really fun simulation of life in the big city (I should know - I worked for a real Lloyds of London broker here in Ireland for over 3 years, and my father IS one.)

The Graphics (mainly the Bar-Chart) are colourful and gameplay is quick and responsive. The Menu system is easy to use and requires little learning. Its also great fun to play with friends, against the QL, or even alone.

Summary

The UNREGISTERED version of FC is available from Steve Johnson (disk number SJPD 60, along with several other useful programs) or via QubbeSoft P/D (on Disk Special 46). Until the problems with the QXL compatibility are solved (Which I'm sure will be, as Mark is an excellent programmer, and I'm sure the only reason it doesn't work now is because it was never tested on a QXL, as I don't think Mark or Brian own one.) I doubt I'll register Climes, as I just can't use it I never use my "real" QL these days. Don't let this put you "real" QL owners off though - I'm waiting for the QXL compatible version!!!

Now, you'll have to excuse me....I've got my broker on the other line, so I'll have to leave you.....Just Remember: BUY LOW, SELL HIGH!!!!

■

Editor's note: Please refer to the News section of this magazine about SJPD's sale. The PD service will soon be maintained by Phil Jordan - we will keep you informed!

Something different: Did you enjoy a game? Did you like a piece of PD software? Tell us and our readers, please!

All the World's a QL stage - Part 2

Doug LaVerne

Usenet & Discussion Groups

One important resource in the international QL community is the ql-users mailing list or discussion group, majordomo·nvg.ntnu.no (send "subscribe ql-users", in body, not subject).

```
============================================================
Date:
Wed, 1 Jul 1998 16:45:45 -0400
From: Lanciault.Francois@gecalsthom-energies.qc.ca
To: ql-users@nvg.ntnu.no
Subject: Rf. : [ql-users] New facilities - Rant Mode On

You wrote:

› Can I just ask people to hang on a minute and think
› You are going to add a whole new naming system to the QL. No
› problem for you guys who change operating systems like I
› change shirts. ‹...snip...› But what about the average QL
› user - most of them don't have Internet access. ‹...›

Now this is tricky. If you make SMSQ/QDOS better, you might
lose some "average" ql users. But if you don't make it better,
the QL will never be able to run some "top notch" apps and you
will loose many above ‹...snip...› The most important thing
right now, IMHO, is to get Internet access with the QL ASAP.
Surfing the net will become the main computer activity soon
‹...snip...›
```

Years ago I subscribed briefly to the Usenet group comp.sys.sinclair. At that time, out of hundreds of postings perused, only one had to do with the QL. I unsubscribed then, but have not had time to find it again and sample it.

I have also been at one time or other subscribed to soc.culture.russia, soc.culture.bolivia, and soc.culture.caribbean, simply to "hear" people from other parts of the world discussing issues important to them without the discussion's being put through the filter of US media. Discussions may range from recipes to local cultures' ability to survive encroachment from more wealthy countries to non-US politics. The tone may be anywhere from calmly informative to vitriolic.

All from my little $99.95 (Gold Card and external diskettes upgrade) QL, scrolling across my Acorn screen in green, white, red and black. Really and truly.

Internet Relay Chat (IRC)

Many of the older, command-line-interface (CLI) and text oriented Internet features such as IRC, archie, gopher and the like are still available on my ISP's system, even though they may have decreased in usage and in revenue production. Many of these were popular when I first got online in 1994.

Foxpro, the commercial PC database package, was the subject of Internet Relay Chats (IRC's) in the spring of '95.

We Chat folk had one IRC at 8pm Eastern Daylight on a Monday, wherein I had scrolling across my Acorn screen ‹Jeff_B› from Hong Kong, ‹Malc› from UK, ‹Jerry_R› from Nova Scotia, ‹PatB› from Florida, ‹Cindy_G› from Maryland, perhaps ‹ColinK› from South Dakota, ‹Rick› from New Jersey, and others - all simultaneously.

For those of us in Eastern Daylight time it started at 8pm, but for ‹Jeff_B› it was already "8am tomorrow". ‹Malc› in UK went in to work in the wee hours of the morn and fortified himself with coffee. We all said our hellos, IRC'ed, and said our international goodbyes. And yes, it's possible to have half a dozen different conversational threads on-screen at once.

My home screen looked like the following in one of our more light-hearted moments (these are excerpts from the original chat log, not necessarily consecutive in the original):

```
============================================================
[DougL] Jerry: of course, not thinking fast.
[DougL] hi Jeff
[Malc] Hi there.
[PatB] Malc: why so far behind??
[DougL] Where are you Jeff?
[Jeff_B] Hong Kong.
[Malc] Jeff: What time is it there?
[Jeff_B] 8:23 Tuesday morning.
[SERVER] Rick ... has joined this channel
[Malc] I've got to get some caffeine (falling asleep)--back in
a mo!
‹Jerry_R› ‹--Nova Scotia
[DougL] irc does sort of erase time zones.
[Rick] Doug: has Colin been by?
[DougL] Rick: haven't seen/heard him.
[Jeff_B] Has anyone run the Beta Visual Foxpro on BETA of
Win95?
[Malc] I've got a copy Windows V1.2 on my shelf - any buyers?
[Malc] On 160K 5.25" disks!
[DougL] tuppence?
[Jeff_B] Antiques fetch good prices
‹Jerry_R› antiques like my current computer
```

```
[DougL] Jerry: 286? 386? Would you believe a Sinclair QL, BTW?
[Malc] Doug: Done!
[DougL] Malc: thanx. Could you xfer that to QL-formatted disks,
please?
[Malc] Doug: First thing in the morning.
[SERVER] CindyG ... has joined this channel.
[CindyG] Evening all. Hi Doug
[Jeff_B] Hi Cindy.
‹Jerry_R› ... VBUNS! Visual Basic Users of Nova Scotia.
[DougL] Jerry: and what are you going to call the Pascal folk
in NS? Sorry ... :-)
[CindyG] Has anyone worked with Delphi? Specifically getting it
to read a Foxpro .dbf?

(etc.)
```

Going to the Well

In the 1995 version of this article, I had sampled the WELL, the famous 'virtual community' headquartered in San Francisco, USA. Just this month, I joined the current incarnation of WELL, doing part of the work on my QL. Just:

```
USIT% telnet well.sf.ca.us
‹enter›
```

or

```
% telnet well.com ‹enter›
```

or

```
[g]o http://www.well.com.
```

WELL stands for Whole Earth 'Lectronic Link. It was founded in 1985, and has made the transition to the modern web. A text interface is available. It was at one time famous for having rather high-brow discussion groups ("conferences"); however, I haven't had time to sample their current fare.

There are of course many on-line communities now, including AOL (American OnLine), Mirabilis ICQ (I-Seek-You), just recently bought by AOL, and GeoCities, where I have a nascent web site (Athens-Delphi-5019), which views fine in Lynx on the QL, except for the graphics. Many of the search engine/portal sites are becoming community type sites offering, e.g., free email and web space.

Gopher and Archie

These are Internet tools, not comic book characters.

Gophers use menus to point to various files and information resources. Archie allows searches of Cyberspace for specific filenames, so as to download free files and software. They're still on my ISP's system, so someone's still using them. Archie still shows signs of having timing-out problems. And, 'Net search engines on Portal sites have probably taken over much of the business.

Miscellaneous

In the previous edition of this article, I registered with "elib" software library in Berlin, a massive collection of algorithms, software and test packages with links to other large software libraries. A new visit to elib (now http://elib.zib.de) seems to show they've clarified or refined their focus and have become more clearly a library on mathematical areas.

There are too many goodies out there to go over them all. Oh, and did I mention I found them all from a QL? For the cost of local calls and monthly ISP charges. Honest.

* * *

Hardware/System Setup

One comment gives some perspective on the need to have the latest hardware and software. The comment is by Noam Chomsky (from, incidentally, Vince Sabio's on-line, worldwide humor service "HumourNet" - no, not an incorrect spelling). It goes roughly: The Internet are an elite - most of the world's population has never even placed a phone call.

In short, Lynx, archie, QLs and the like still have a place.

Equipment: QL (original 18 in. x 5 in. black box, no tower), GC (68000, 2M), 68008 removed, Falkenberg KB interface (PC KB; membrane removed), Hermes (not Super Hermes), Minerva 1.97, USR 14,400 Sportster modem, modem cable by Don Walterman, RGB Vision-III monitor by Acorn.

No HDD, dual 3.5" diskettes (HD) unknown make, bottom-of-the-line 9-pin dot matrix printer (Star NX-1001), original Sinclair power supply.

Software: QDOS (no SMSx yet), and principally Xchange (v3.90l), QTPI (v1.39 ...!), PE (Pointer Environment, v.1.61), Psion Quill, plus, via the ISP, Lynx, Pine, archie, gopher, IRC, etc.

Sounds like an NC, doesn't it?

Some References

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■

What are all these handshaking lines? - Part1

Unraveling the mysteries of the serial port

by Nasta

The classic RS232 or more appropriately, V24 serial port must be one of the simplest and yet one of the least understood standards for communicating with peripherals. After all, considering it in fact uses serial communication to minimize the number of wires used, it should offer far less possibility of things going wrong. But strangely enough, it doesn't.

Let me first explain a little about the origins of V24 and its signals. The basic purpose of V24 is to transmit 'words' of data serially, one bit at a time from one device to another, asynchronously. The later in this case means, there is no need to keep the devices which communicate in synchronicity to accomplish communication. I will come back to this later. To accomplish its task, the standard provides several signal lines, in general, one data, one clock, and two handshake lines for each direction of data travel. Under most circumstances only a subset of these are used. The standard does provide for more lines but they are rarely if at all used in real implementations.

Computers, terminals and modems

Now this is where the complication begins. The V24 standard evolved from a world of connecting computers to terminals or computers to modems or modems to terminals. Whoever created the standard wanted to make it more 'universal' and decided to define two categories of devices, called DTE and DCE. Unfortunately, the people who decided how to label the signals obviously had something against the ones who defined the categories and as a result, looking at a typical device, you either can't tell whether its a DTE or DCE or are not certain which lines are input and which are output - or both, which is the reason for all the confusion. Fig. 1 shows a handy table which explains the more important signal names and how they are implemented on a DTE and on a DCE.

From the above, it is rather obvious that when a cable is made to connect a DTE and a DCE type device, the signals with the same names at the ends should be connected together. However, what a DTE and DCE actually is, mostly isn't obvious. The only thing with some dose of security is, a modem is a DCE. A computer is USUALLY a DTE. For instance, the original QL had one serial port wired as DTE and one as DCE. When wiring the various types of serial ports, the rule is, wire an input to an output and vice versa, never output to output or input to input. Now, what remains to be said is, which input to which output.

The basics

You have no doubt noticed the shading in the table above. The first 8 signals are grouped into two groups of four. The two groups are the two directions of data travel - to and from a device. For the purpose of the following discussion, I will use the DTE directions, and will continue to do so for the remainder of the article unless otherwise noted. To make things a bit easier, input or output letters (I and O) will be appended to the signal names.

RX_I and TX_O

These are the receive data input and its counterpart, the transmitted data output. In order to make a serial link from one device to the other, a minimum of two wires are needed for unidirectional communication, or three wires for bi-directional communication. For unidirectional communication, tie the GND lines of the respective ends together, and the RX_I and TX_O signals on the respective ends, depending on the direction of data flow. For bi-directional flow, the RX_I and TX_O on one end go to TX_O and RX_I on the other, this is a 'crossed over' connection. Do not forget to 'translate' the names if you are connecting different type devices (DTE to DCE, or DCE to DTE) (see fig. 2 on the next page):

Signal	Full name	DTE direction	DCE direction	Type
RX or RXD	Receive Data	In	Out	Data
RCK or RXC	Receive Data Clock	In	Out	Clock *
RTS	Request To Send	Out	In	Handshake
DTR	Data Terminal Ready	Out	In	Handshake
TX or TXD	Transmit Data	Out	In	Data
TCK or TXC	Transmit Data Clock	In	Out	Clock *
CTS	Clear To Send	In	Out	Handshake
DSR	Data Set Ready	In	Out	Handshake
RI	Ring Indicator	In	Out	Modem
CD or DCD	Data Carrier Detect	In	Out	Modem
SG or GND	Signal Ground	Not applicable	Not applicable	Ground

Fig. 1 * - Clock lines are optional and rarely implemented. Some modern modems do have them, in case they support high bit rates.

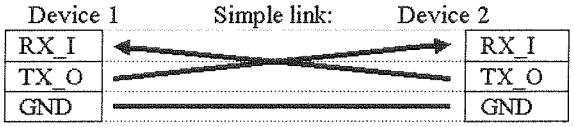


Fig. 2

Bit by bit

Now, how does data actually get across two lines? As the word serial implies, one bit at a time. But how does the respective opposite end know which bit is which? To accomplish this, framing is used. Framing is a process where bits of one word are enclosed by other special bits so that the receiver on the other end can recognize which bit is which. There are three types of 'special' bits in addition to the bits of the data, and all of these are transmitted in the following order:

1) Start bit (mandatory)
2) Data bits (bits of the data word)
3) Parity bit (optional)
4) Stop bit(s) (mandatory)

The data bits make a data word, usually of selectable length, from 5 to 8 bits. The reason for word lengths less than 8 is historical. The roots of V24 come from the olden times of teletype machines, one step removed from a telegraph. 5 bits were enough to represent the 32-character set used. 6 bits is rarely used, while 7 bits is rather obvious, since that is what is needed for the original specs for ASCII, the de-facto standard for character encoding today. 8 bits has become more popular with computers coming into play since characters are not the only type of data they communicate with, and 8 bits makes a byte. The least significant bit (bit 0) is transmitted first. The operation of the parity bit is not so straightforward. This bit is optional, and may be omitted if no parity is used. The parity, if used, can be even or odd. When parity is used, the parity bit is set to 1 or 0 to make the total number of bits that are set to 1 even or odd, depending on weather even or odd parity is used. Only the data and parity bits figure in parity calculations. The parity bit can sometimes also be forced to be either 0 or 1 regardless of the number of bits that are 1. Representing the signal graphically would result in the following graph:

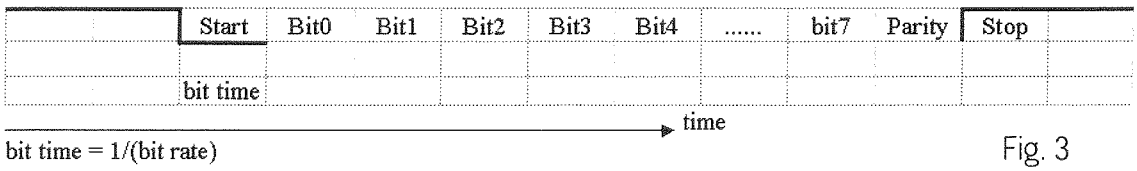


Fig. 3

The initial state of the serial line is called a 'mark' state. This is actually a presence of signal on the line, and has remained from the times of the teletype machine - as long as the line was in 'mark' state, it was deemed to be operational. The opposite of 'mark' is 'space'. The start bit is always 'space' which is what makes it detectable by the receiving device. Once a start bit is detected, data bits must follow, then the optional parity bit, and then one or more stop bits. Stop bits are always 'mark'. A minimum of 1 stop bit must be present. It is also possible to have a fractional part of stop bits in some system (for example 1.5 stop bits). In effect, the number of stop bits is the minimum time the line will be in 'mark' state before a new start bit arrives. There is no limit to how long a line can stay in 'mark' state. This is the reason why this kind of serial communication is called asynchronous - a start bit can occur at any time after the stop bit(s), there is no predetermined timing or synchronization - the start bit is used for synchronizing every time new data is sent.

A few more related facts:

• Bit time and bit rate: Each bit lasts a certain length of time, and the number of such time slots that occur in a second is called the bit rate. During the evolution of V24 the distinction between bit and baud rate has disappeared and today they mean the same in almost all circumstances, at least as applied to the V24 link. Throughout this article, both will be used even though baud rate is the less correct term, but it is the one normally used amongst QL users. In actuality, baud as a term originates from modems. With modems it is possible to use such modulation that one 'information cell' actually encodes more than one bit, so it is possible for the baud rate to be less than the bit rate. Funnily enough the standard does not prescribe specific baud rates, but during it's history several have become popular, and thus, de-facto standard. In general they are power of two multiples of 300 and the former times 3. Some standards for newer modems prescribe whole multiples of 1200, 2400 or 4800.

	x1	x2	x4	x8	x16	x32	x64	x128	x256
x1	300	600	1200	2400	4800	9600	19200	38400	76800
x3	900	1800	3600	7200	14400	28800	57600	115200	230400

The darkly shaded rates are very rarely used, and the lightly shaded rates are uncommon for links but are used in modems, in which case the modem itself provides conversion from and to one of the more popular rates. Slower data rates (50, 75, 150) were used for teletype machines.

• A framing error occurs when the above sequence of start, data, parity and stop bits is violated. For instance, when the parity bit indicates wrong parity, or when the stop bit is 'space'. In particular, if there are more 'space' bit times in sequence than the total start, data, parity and stop bits, a 'break' condition occurs. This is also a legacy from teletype days because it meant that the line has broken down or was otherwise severed. Choosing the wrong baud rate may also result in framing errors, in particular if the transmitter baud rate is less than the receiver baud rate - the bit times will be larger and the whole word will take more to transmit, which means the receiver will end up thinking some of the data bits are stop bits. Also, if one end uses parity and the other doesn't the parity bit will get confused for the stop bit, or the other way around.

• The signals on the V24 lines are actually inverted in respect to the picture above, since that is how the standard line drivers and receivers work. When measuring the voltages on the lines that can sometimes lead to confusion. A short discussion on this will follow near the end of the article.

• In the first table, where all the usual signals were present, two clock lines were mentioned. Some of you will no doubt wonder how V24 can have clock signals and be called asynchronous. It should be noted that the clock signals are rarely used, but even if they are, the link remains asynchronous - the correct term is, it remains word-asynchronous, but it is bit-synchronous. What does this mean? Simply put, the bits are synchronized, but the words can occur at any bit boundary. Mostly, however, no clock signals are used, and because then there is no common timing reference signal, the ends of the link MUST be set up to the same baud rate - in effect, the timing for each bit is generated internally to the receiver and transmitter respectively. This would appear to make the system bit-asynchronous - after all, the baud rate generators in the respective ends can be and usually are out of synch. A typical receiver however, employs techniques to bring it's baud rate generator in synch by examining when the start bits occur. This technique is called 'over-sampling'. The receiver internally operates with a higher clock frequency, usually 16 or even 64 times the baud rate. When a start bit is detected, it's length is measured with respect to the higher clock rate, and then a delay is calculated that is half this length. All the subsequent bits are then examined only when this delay expires with respect to the

start of each bit time interval, which actually means all remaining bits are examined at a point approximately in the middle of a bit time. In this manner the receiver can synchronize it's baud rate generator to within several percent tolerance of the transmitter baud rate generator, which is perfectly adequate for reliable data transfer, even without clock lines. Because there is a general tendency for baud rates to increase for short distance links, some high speed serial ports do provide clock lines for explicit synchronization, to avoid generating 16 or 64 times the bit rate, since this can be a quite high frequency.

The real world - handshaking

Practical devices rarely use the simple link as described above, with only the receive and transmit signals connected. The reason for this is that for a real device it may not always be possible to receive data - it might be engaged doing other things at that moment. For this reason, there has to be a means to tell the transmitter that the receiver can't receive at the moment, so the transmitter should stop transmitting. This task is accomplished by handshaking. In general, two methods exist:

1. Software handshaking

With this method, data usually goes only in one direction at a time. This is also called half duplex. The opposite, full duplex is the case when data can travel both directions at the same time. The reason half duplex is used is that the other direction is used to relay data back that tells the transmitter to start or stop receiving, or reverse the flow of data (transmitting device and receiving device reverse roles). For instance, initially, device 1 is the transmitter and device 2 is the receiver. Then, until a start signal is transmitted by the receiving device (yes, I know, it's a bit confusing), the transmitting device does not transmit. When it receives the start signal, it starts transmitting and transmits either until there is no more data to transmit or a stop signal is received. Then it resumes waiting for a start signal, and so on. One popular method of software handshaking that uses this scheme is called XON-XOFF where the XON and XOFF refer to the start and stop codes used. An extension to this standard provides for a 'turnover' code which reverses the roles of transmitter and receiver, for bi-directional communication. This method is not very good for true full duplex devices because data can travel only in one direction at a time hence the throughput can be reduced by half if there is data to be sent both ways.

2. Hardware handshaking

This method uses additional wires from receiver to transmitter which provide 'feedback' to the transmitter, signaling weather it may or may not transmit. The V24 standard provides 2 such lines for each direction of data travel. Frequently, however, only one of the two is implemented. The logic of the handshake lines is such that transmission is only possible if both are active. If either is inactive, transmission cannot occur.

RTS_O and DTR_O

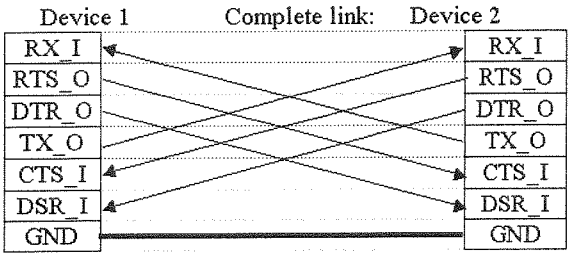
These signals are outputs from the receiver. If either is inactive (see definition for active and inactive further down), the transmitter must not transmit. They can become inactive at any time during transmission too, and if the transmitter finds them inactive, it must suppress generation of a new start bit and all the following bits. If a start bit is in progress when either or both of the lines become inactive, the transmitter has to finish transmitting the current word, including all framing bits.

Although at first glance it appears that a simple 'and' logic gate is enough to determine weather transmission should be possible or not, there is a subtle difference between the two handshake outputs. In principle, the combination of DTR_O inactive and RTS_O active should not occur. The reason is that DTR_O signals by it's activity that the receiving device is turned on. Then, the RTS_O signal should be actually used for handshaking, whereas the DTR_O signal really is a link integrity indicator. In practice, if the transmitting device is a computer, it should not even allow a channel to be open to the serial port unless the receiving devices DTR_O signal is active, whereas, it should only stop transmitting if RTS_O is not active. This protocol is however, frequently violated by devices that do not have both handshake lines, and this has to be taken into account when such devices are connected.

CTS_I and DSR_I

These are the counterparts to RTS_O and DTR_O. In a normal handshake connection, RTS_O connects to CTS_I and DTR_O connects to DSR_I. In effect, CTS_I is the transmitter input that senses the state of the receiver's RTS_O signal, ditto for DSR_I and DTR_O.

Finally, a 'complete' handshake connection is made as follows:



Handshaking problems and cables

In the real world, the great majority of connections is between 'problematic' devices - ones that just don't conform to the above theory, and which have partial handshaking, and implemented differently at each end, to boot. Unfortunately, for most of these devices it is impossible to defeat handshaking in software, so it has to be done in hardware, by wiring the cable correctly. Here is a handy table:

			DEVICE A																						
		DTE→	RTS	DTR	CTS	DSR	RTS	DTR	CTS	RTS	DTR	DSR	*RTS*	*CTS*	*DSR*	*DTR*	*CTS*	*DSR*	RTS	CTS	RTS	DSR	DTR	CTS	DSR	NONE
	DTE ↓	DCE→ ↓	CTS	DSR	RTS	DRR	CTS	DSR	RTS	CTS	DSR	DTR	*CTS*	*RTS*	*DTR*	*DSR*	*RTS*	*DTR*	CTS	RTS	CTS	DTR	DSR	RTS	DTR	NONE
	RTS	CTS			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
	DTR	DSR																								
	CTS	RTS	↓				↓						↓													
	DSR	DTR																								
D	RTS	CTS			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
E	DTR	DSR																								
V	CTS	RTS	↓				↓						↓													
I	RTS	CTS			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
C	DTR	DSR																								
E	DSR	DTR																								
	RTS	*CTS*			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
B	*CTS*	*RTS*	↓				↓						↓													
	DSR	*DTR*																								
	DTR	*DSR*			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
	CTS	*RTS*	↓				↓						↓													
	DSR	*DTR*																								
	RTS	CTS			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
	CTS	RTS	↓				↓						↓													
	RTS	CTS			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
	DSR	DTR																								
	DTR	DSR			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
	CTS	RTS	↓				↓						↓													
	DTR	DSR			↑	↑			↑				↑	↑	↑		↑	↑	↑			↑		↑		
	DSR	DTR																								
	NONE		↓				↓						↓													

Instructions for the use of the above table:

1. Determine weather your devices are DTE or DCE type by examining the handshake signal direction. Further below you will find instructions to build a simple device that can help you determine that, and how to use a voltmeter to determine the device type. A computer is usually DTE and a modem is DCE.

2. Choose the appropriate device A and B, by choosing the column and row which has the handshake signals you have on the respective devices. Use the wiring diagram at the crossing of the rows and columns to make a cable.

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3. If device A and device B are of the same type (Both DCE or DTE) tie the RX signal on one end to the TX on the other, and the TX signal on one end to the RX signal on the other. If device A and B are of different types (one DCE the other DTE) then tie RX on one end to RX on the other, TX on one end with RX on the other.

And that's it, or at least it is in theory :-)

Here are some more helpful notes:

- The darker parts of the diagram represent connections which are forbidden because they are connecting two inputs together or two outputs together.
- The handshake signal combinations shown in italic lettering are unlikely to occur, and for them, the wiring diagram shows two wire widths. The signals which have the thinner arrows entering them should preferably be disabled by a software or hardware setting of the device, but if this is not available, the thin part of the wiring shown MAY work. Some of these unusual devices will have a signal marked +VCC or +12V (anything between +3 and +15 will do), and it is preferable to tie the signals that have the thin arrows going into them to this special signal if it is available. For connections that have the thin arrows on both ends, tie the thin arrow signals together on device A and B, then tie this to the +VCC or +12V signal on the end where it is available.
- The row and column with 'NONE' written for handshake signals, means that the respective device does not have hardware handshake, hence, even though one of the devices may support handshaking, the connection will be a non-handshake one. The wiring shown in this row or column represents a way to disable handshake on a device that has it but it is not needed for a particular connection. Usually, in such a non-handshake connection, software handshaking must be used.
- The table does not show cases where handshake is available only in one direction (only one handshake signal) because such devices probably do not exist. Normally, if there is only one handshake signal on a device, it means the device may only receive data (if the handshake line is an output) or transmit data (if the handshake line is an input). For this case, the same diagrams can be used, only the unimplemented direction of data transfer, and it's associated signals, are not wired. The signals that loop back on the same device still must be wired, even for this unidirectional connection type.

Modems

Modems have two more lines that are output, called DCD and RI. Some DTE devices, most notably computers, have corresponding inputs. The connection of these lines is usually optional. Their use is to signal special events from the modem. The DCD signal will go active when the modem has managed to connect to another modem, and the carrier signal between them is present and stable. RI will go active when the modem tied to a telephone line detects that it is being called, i.e. that the telephone it is emulating is 'ringing'. Nowadays, most modems provide alternate ways of detecting these conditions so in most cases these lines do not need to be connected, however, sometimes connecting them has benefits, depending on the software that uses the modem. It should be noted that a modem usually generates it's DSR output (remember, a modem is a DCE type device) in a slightly different manner. Normally, a DCE type device will activate DSR as soon as it is switched on. A modem can also be programmed to deactivate this line momentarily when the telephone connection is severed or the link between it and a remote modem is severed. If you remember the discussion about DSR and DTR, they are normally used to indicate connection integrity, and this inactivation of the DSR line by the modem is used to signal that the connection has been lost.

Clock signals

Just a slight recap of the clock signal lines. These are mostly present on modems that support high speeds on their V24/RS232 port. Mostly, these lines, if present, can be programmed as either input or output - the device that generates them as an output is then used as the timing reference device. The clock signal output should be tied to the respective clock signal input on the other end of the cable. The RX and TX clock signal prefixes should match the RX and TX lines that are tied together, so if RX of device A is tied to TX of device B, then RXC on device A must be tied to TXC on device B, and vice versa. As always, inputs have to be tied to outputs, and the clock line direction must be programmed accordingly.

Active vs. inactive - signal levels and loads, cable lengths

The V24 standard has a rather long evolution in which several prescriptions were made as to what signal levels (voltages) correspond to an active or inactive signal. In practice, only one definition survives, but we will mention two: RS 232 prescribes that 'active' is any voltage between +3 and +15V respective to the GND signal, which is 0V. Inactive is anything between 0 and +3V. This definition is rarely in use today. RS 232C is by far and wide the most common. In fact, when RS 232 serial ports are mentioned, in 99.9% of cases RS 232C functionality is assumed. RS 232C is slightly

different, and takes care of one loophole in the definition of signal levels on RS 232 (without the C) - namely, what is +3V and what is 'less than' +3V. It was never clearly defined what the 'active' vs. 'inactive' threshold tolerance is, and in the real world this is very important. Designers mostly circumvented this by ensuring signals never stayed anywhere close to 3V, however, for long wires, signal losses and ringing or noise could produce repetitive signal fluctuations around 3V even within one bit time, which could make the serial link unreliable. Hence, RS 232C includes a large safety zone. It prescribes that 'active' is anything between +3 and +15V, while inactive is anything between -3 and -15V, referenced again from GND, which is 0V. The signal level between +3 and -3V is 'undetermined' and if a signal fluctuates between this level, the last legal level is assumed, until the signal again crosses a boundary of either +3 or -3V. It must be said that in practice this is often not so, but for applications which use very long cables (several hundred meters) this kind of behavior must be insured. For most normal applications this is of no concern. All output signals are prescribed to be loaded by inputs that look like a 3k ohm resistance. Again, in reality, this can vary and can actually be much lower without affecting communications integrity, indeed, this is frequently used to provide better reliability for long cables. As long as the load is such that the signal level is within prescribed margins, all should be well. The cable length specs for V24 are at best confusing, and in practice it's mostly a try-it-and-see operation. For short distances, say 10m, almost any kind of cabling will work even for high speeds. In general, shielded cables are better. It should be noted that devices that are intended to operate connected by very long lines, usually have a special signal called 'shield ground' implemented. This is NOT the signal ground (GND) as mentioned in the signal descriptions. It's purpose is to have the cable shielding connected to it, while the cable still has to have a GND line in it. I believe that further discussion on long cables and their associated problems is well outside the scope of this article. However, I must say that good old RS 232C is actually very forgiving. I have had cases where hundreds of meters of relatively low grade cable worked perfectly without any special arrangements on either end, at quite high speeds (19200 and 38400 baud).

In the next issue, Nasta shows you how to build RS232 indicators and a simple breakout box.

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Tel:(+353) 404-45319 Fax: (+353) 404-45558
Email: Q_CELT@hotmail.com
OR darrenbranagh@hotmail.com

Last Minute News about Paragraph

Francois Lanciault, the author of the Paragraph software (a Prowess based word processor) has placed a message on the QL Users Email Mailing List explaining that he has decided to release by Shareware the fully working first version of Paragraph. Users will be able to upgrade to later versions upon payment of a registration fee listed in the documentation of the package (probably about 20 or 30 pounds). It is hoped this free first version will be released via QL-related Web pages on November 15th, 1998. Try Thierry Godefroy's site for example.

Francois emphasises that this first release will be a fully working version (complete with picture and table handling as well as the basic wordprocessing facilities), with no compulsion to register unless you wish to receive updates to future versions. It is of course essential for you to own and use Prowess to be able to use Paragraph!

There will be plenty of time for you, the readers, to test Paragraph before the next QL Today deadline (15th of December). Please write to us what you think about it. We would like to get as many impressions as possible.

How long are you waiting for this software? If you like it, please register to make sure it Francois will carry on working on it!

■

An Unofficial QL Meeting in Wales

Darren Branagh

Did you hear the one about the two Germans, the Welshman and the Irishman?

Sounds like the intro to a joke, doesn't it? Prior to the Byfleet Workshop on 4th October, I was lucky enough to be Invited to stay at Dilwyn Jones' house in the north of Wales for a few days. Also in attendence were Jochen "Crisps" Merz and Marcel "Pizza" Kilgus. (All will be revealed..)

I arrived via the superfast HSS Stena Explorer at around 2pm - only 99 minutes to get from Ireland to Wales by sea, thanks to the 4 huge engines - 2 of which are marine versions of the DC10 aircraft engine. I arrived on Thursday the 1st, with Jochen and Marcel already there. I had never met either before so was looking forward to a few days in their company.

It was Marcel's birthday on the day I arrived - so Dilwyn and Jochen had been shopping for a "birthday cake" - at least thats what they claimed it was - turned out to be some awful chocolate mousse thing and 50% of it ended up on Dilwyn's shirt. It was the only birthday cake I've ever seen that I ate with a spoon - good job we decided against candles, as they probably would have sank into the chocolatey mess without trace!

However, the real disaster came when we decided to go to an Indian restaurant in Bangor to celebrate that night - Jochen, Dilwyn amd myself were acomplished curry lovers, but poor Marcel hates them - he only ever eats pizza or chips. He ordered a Korma curry and hardly touched it. Some Birthday!!

We headed back to Dilwyn's and started up the Computers...

"Bloody Toshiba Laptops!" - Marcel Kilgus

By this stage every conceivable QL derivative was in operation in Dilwyn's house - under one roof we had a Black Desktop Pentium running QPC, two Toshiba Laptops and an Acer Laptop running QPC, Jochen's Atari running SMSQ/E, a standard QL with Gold Card and QL Romdisq, a QL tower cased Aurora System, and a 286 Luggable PC with a QXL inside - most of which where running at all times, usually with someone in front of them!!

Dilwyn was in the Dining Room writing a new program, called EASYBASE, which will be a simple to use database program, which is really easy to use, unlike Archive - with just the essential bits and a really user-friendly front end interface which looks and acts very like his popular VIEWER program, and matches its simplicity. Jochen, on the other hand, was delving inside the code for QD - his amazing Text Editor par excellence and - as he hopes to release the new version, called QD98, soon - with added features such as the ability to move the pointer over an icon and a information box will pop up to tell you how to use the icon - and even what it does!!

Marcel (or pizza, as he's become known - well, he doesn't like curry, LOVES Gummi Bears though) was just as busy. He has been working on the new version of QPC - called QPC2. This is virtually a complete reworking of the original, to give a completely new version, which will be capable of MULTITASKING with Windows 95 or 98. Jochen told me that upgrades will be available to those who own the original version at a reasonable price. I purchased a copy of QPC with an upgrade to come - the prospects of being able to ALT&TAB between QPC and Windoze is quite mouthwatering!!

All this programming was ably assisted by a bag of Gummi Bear jellies and some jelly cola bottles - pretty average programmer rations. Actually Dilwyn turned out to be a fairly decent cook - and after a pizza lunch (to make Marcel happy) we headed out sightseeing and went to the top of Snowdon (the tallest mountain in England and Wales) via the Mountain Railway. At £15 per ticket, It was very expensive, but fun. Great sheer drop views of the surrounds from about 1,000+ metres up!!

Darren Branagh and Marcel Kilgus share a joke

However I think we all agreed that the best trip was on Saturday, when we visited the Electric Mountain - one of the biggest hydro-electric pumped storage power stations in the world. It is capable of producing 288 MW from each of its 6 turbines - enough to power London for an entire day. It has the fastest response time of any power station in the world, as it can be producing electricity at full power in just over 10 seconds. It is all held entirely out of sight inside the mountain due to the national park environment, and the power station is housed in a huge underground cavern the size of two football pitches. As we were being ferried into the mountain's 16 kilometres of tunnels, we where told to wear our hard hats we had been given Jochen said that this was because there was a lady driver on the bus goes to show no topic is sacred on a QL weekend!!

Quite handy though that this was only a few miles from Dilwyn's house - as the power being used by all our computers there was probably enough to keep it busy for the weekend!! Jochen suggested we move the London Show there - as power points always proved a problem!!

After this, we had lunch of Cawl (a thick Welsh soup of chicken and vegetables) and headed for home, as an early night was needed for the trip to Byfleet on Sunday - we had to leave the house at 4am or so for the five hour journey to Byfleet. We wondered how this

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was going to affect Marcel - as he was in bed until midday on the Friday!!

The Byfleet Show

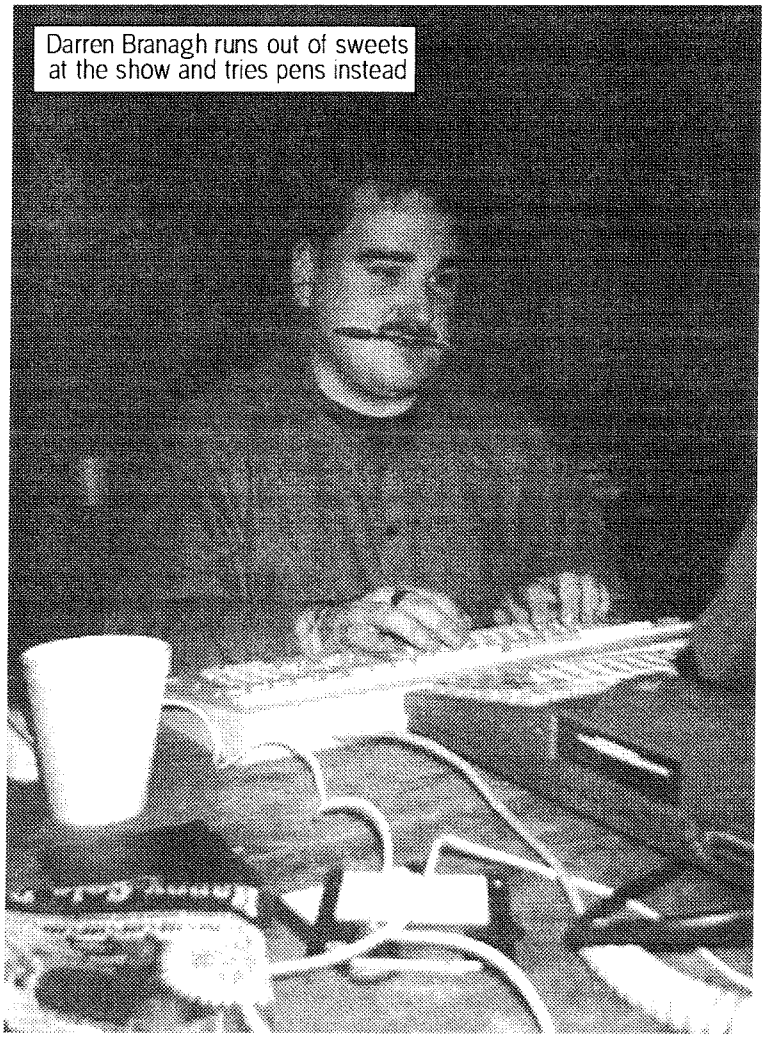
We took to bed early on Saturday night - it's a 5 hour journey from North Wales to Byfleet, so we left at 4am to arrive in plenty of time. (Are we dedicated QLers or what?!) The drive was pleasant enough despite Dilwyn almost crashing due to a fit of the giggles on the way!

Most of the traders were in the process of setting up when we arrived - everything was ready by 10am.

Tony Firshman was the first trader on entering - just inside the main door. On display were various hardware devices - the Romdisq, a solid state fast loading bootable storage circuit board for the QL, as well and the range of SuperHermes products. Gem of the show though was Keith Mitchell's MinisQL - a box containing an Aurora, ROM Slot and an MPLANE (a new small backplane for connecting Aurora, SGC, etc together) and a PSU. All this inside a case no bigger than a standard modern PC Laptop case. Tony is also looking into supplying them with LCD screens - so there will be a REAL QL Laptop one day!

QBranch were busy selling their usual vast range of software and with Roy Wood now the proprietor of a full time shop outlet, called the Bank Volt, the range of products is sure to expand. Roy is also supplying PC Laptops now with QPC pre-loaded, phone for details.

Jochen, as ever, had a crowd around him for most of the day - QPC was selling like hot cakes, and the promise of a FREE upgrade to QPC2 for buyers on the day was surely fuelling this.



Darren Branagh runs out of sweets at the show and tries pens instead

I also heard of several older programs that are currently being updated - mainly several of the Classic Digital Precision programs like Perfection and Turbo. These will work with the extended screen resolutions of Aurora and QXL/QPC, and many bugs with be cleaned up further details will follow.

I met Christopher Cave at the show too - a nice guy who has written a beauty of a program, called MView. It's a pointer driven multiple File Viewer, that will load Quill_doc and plain text files, and even code, several at a time. It will permit up to 16 files at a time to be presented, and can be configured using Config. Since the show I have learned that Chris has updated it yet again to be able to view Abacus Spreadsheets too, and printing of the files can be redirected to any device. I am working on a review of this great little program.

Bill Richardson was there too, doing brisk trade on Z88 products. Both Bill and myself launched the second issue of Z88 USER, the new Z88 Magazine, at the Byfleet show - and most of the stock I brought sold out by mid afternoon. Full subscription info is available from Bill, and any articles can be sent to me.

Ron Dunnett gave a talk on the new QubIDE, Which will have support for ZIP Drives and other large storage devices, and Geoff Wicks was there with his JUST WORDS! set of programs - to which he has added a new freeware program, called the Spelling Crib - which is a great program for those bad spellers out there. Just enter a few of the letters you know in a word, and it will throw back all the possible permutations that fit your entry. Very neat, Geoff, and worth a quid of anyone's money. Rich Mellor was also there for

RWAP Software, demonstrating his range of QL Adventures and Wargames, as well as his excellent Q-Route route finder.

So there you have it - a fun packed weekend, and one I really enjoyed, not least because of the company I held. I hope to do it again soon. Myself and Dilwyn also hatched a plan for me to become a trader, re-releasing all of Dilwyn's old DJC Software, some of which will be updated by Dilwyn where necessary. So, stay tuned for the Launch of Q-Celt Software!!

P.S. If you ever want to get rid of some old hardware at a QL show here's a tip. Put Dilwyn's name on them. He somehow managed to sell a twin drive unit for £20, despite myself selling (or trying to sell) one indentical to his for only £15!! I came home with my Trump-card, Dilwyn sold his. Maybe his reputation precedes him!!

Jochen: Being one of the survivors of this meeting, I can only agree 100% with Darrens report, it was interesting, good fun and definitely an experience. The log says it was Marcel who picked the chocolate mousse. Very hard time for me, just two small bags of crisps during 6 days ... but I did not show signs of withdrawals. Fortunately, there are no pictures showing Dilwyn and me (deliberately, Dilwyn?). Great time!

...and the winner is... more hot tips

Dominic Lester sent us another candidate, and he will get the next £10 voucher for shopping at JMS or QBranch.

The proc I am proud of if "dayIM" on lines 290 and 300.

```
100 MODE 4 : DIM paper$(3): chan=1
110 PRINT 'Find 1st Sunday + last Wednesday in each month.'
120 INPUT \'Give year for checking (eg. 98): ';year
130 IF year<1900 THEN year=year+1900
140 INPUT \'Print on paper (instead)? (para): y/n ';paper$
150 IF paper$='y' OR paper$='Y' THEN OPEN #3,para:chan=3
160 FOR mmm=1 TO 12
170  days=fdays(1,mmm,year)
180  PRINT #chan,\Month$(mmm);' 1st,';year;' is a ';dow$(days);
190  IF nday<>2 THEN sun_print : ELSE : PRINT #chan,' '
200  PRINT #chan,' and the last Wednesday is ';Month$(mmm);
210  wed_no=(12+21 - nday - 7*((nday=0)+(nday=1)))
220  IF wed_no>dayIM(year,mmm) THEN wed_no=wed_no-7
230  IF wed_no+7<=dayIM(year,mmm) THEN wed_no=wed_no+7
240  PRINT #chan,!wed_no;'.': PAUSE 10
250 END FOR mmm
260 IF chan=3 : CLOSE #3 : END IF : STOP
270 :
280 DEFine FuNction dayIM(yp,mp)
290   zz=mp-(mp>7): w=COS(PI*(zz MOD 2))
300   RETurn 30.5 - w/2 + (mp=2)*((yp MOD 4=0)-2)
310 END DEFine days_in_any_given_month
320 :
330 DEFine FuNction fdays(d,m,y)
340   z = 365*y+d+31*(m-1)+(y-(m>3)) DIV 4
350   IF m<3: RETurn z-(3*(((y+99) DIV 100))DIV 4)
360   RETurn z-((4*m+23)DIV 10)-((3*(y DIV 100+1))DIV 4)
370 END DEFine
380 :
390 DEFine FuNction dow$(n)
400   nday = n-(INT(n/7)*7)
410   SELect ON nday
420      = 0 : RETurn 'Saturday'
430      = 1 : RETurn 'Sunday'
440      = 2 : RETurn 'Monday'
450      = 3 : RETurn 'Tuesday'
460      = 4 : RETurn 'Wednesday'
470      = 5 : RETurn 'Thursday'
480      = 6 : RETurn 'Friday'
490   END SELect
500 END DEFine
510 :
520 DEFine FuNction Month$(y)
530   Mdat$='Jan Feb Mar Apr May JuneJulyAug SeptOct Nov Dec '
540   RETurn Mdat$(1+4*(y-1) TO 4+4*(y-1))
550 END DEFine month
560 :
570 DEFine PROCedure sun_print
580   PRINT #chan,\' the following Sunday is ';Month$(mmm);
590   PRINT #chan,!(10 - nday - 7*((nday=0)+(nday=1)))
600 END DEFine sun_print
```

QDOS Bugs - Part 2

Mark Knight

More known Bugs in official Sinclair QL ROM versions

37. Attempts to close a channel open to ser2 close ser1 instead. (SYSTEM). AH JM JS
    Fix: No easy fix unless you are prepared for some heavy-duty machine code programming.
38. Null parameters to READ can crash the system (BASIC). AH JM JS
    Fix: Don't let it happen.
39. Null parameters to INPUT can give silly spurious error messages and may crash the system (BASIC). AH JM JS
    Fix: Don't let it happen.
40. The system cannot open and close more than a total of 32,767 channels during one session (SYSTEM). AH JM JS
    Fix: Is this a problem? If so use reset button to start another QDOS session.
41. Strings of 32767 characters are not handled correctly (BASIC). AH JM JS
    Fix: Limit strings to 32766 characters.
42. RI stack creeps 16 bytes whenever an error occurs and then RUN is used (BASIC). AH JM JS MG
    Fix: Use GOTO (from command line) instead of RUN.
43. BLOCK with width of 512 pixels doesn't draw anything (SYSTEM). AH JM JS MG
    Fix: Divide area into two blocks or use CLS.
44. Drawing very narrow ELLIPSEs can take ages (SYSTEM). AH JM JS
    Fix: Use LINE instead on these very narrow ELLIPSEs if possible.
45. MRUN or MERGE used on a file of direct commands can leave the file open and cause various other problems (BASIC). AH JM JS MG
    Fix: Use LOAD or Toolkit II command DO instead.
46. "bad line" error in a file of direct commands can crash the system (BASIC). AH JM JS MG
    Fix: Don't let this happen.
47. Trying to jump out of a PROCedure or FuNction with END REPeat can cause memory corruption problems (BASIC). AH JM JS MG
    Fix: This is a daft thing to do anyway, so don't.
48. FILL sometimes fills the same line twice (which only matters during OVER -1 operation) (SYSTEM). AH JM JS MG
    Fix: Draw objects starting from top or bottom rather than sides.
49. MT.SUSJB does not clear the flag if given a new flag location. (SYSTEM). AH JM JS MG
    Fix: Don't suspend jobs not owned by job requesting the suspension.
50. TRAP 4 not cleared if TRAP 3 access fails "not open" (SYSTEM). AH JM JS MG
    Fix: No fix without lots of complex machine code but rarely a problem anyway.
51. Wrong error in mdv access when setting pointer, gives error "bad or changed medium" instead of "out of range" (SYSTEM). AH JM JS MG
    Fix: Beware, trap both errors in your programs.
52. MT.RERES does not work properly and can crash the system if tried (SYSTEM). AH JM JS MG
    Fix: This is not really a problem since MT.RERES is never used in most systems. Don't use it.
53. SV.BRK is set asynchronously and SuperBASIC can be in the middle of being moved when it is changed (BASIC). AH JM JS MG
    Fix: No fix, but hardly ever matters.
54. Serious bugs exist in the ATAN routine in the arithmetic package. When this function is called with a SuperBASIC program bigger than 32k in memory a value a few dozen or a few hundred bytes away in memory is randomly corrupted! EEK! This bug is the cause of many unexplained lockups on many QLs. It affects interpreted programs and those compiled with Q-Liberator, Supercharge or Turbo, as well as machine code programs and extensions that call the Q-DOS maths package. (SYSTEM). AH JM JS MG
    Fix: Load the Lightning maths extensions or run SMSQ/E if your system and requirements merit it.
55. DATE doesn't work properly beyond 2029 Jan 19 03:14:07 although DATE$ continues to work correctly. DATE returns positive values even after the clock wraps around to negative longword values, so:

    ```
    PRINT DATE$\DATE$(DATE)
    ```

    ...will print two completely different date strings after the given date. It is doubtful that this bug will matter to many people (BASIC, sometimes even compiled BASIC). AH JM JS MG
    Fix: Write or load a machine code replacement for the DATE function. Note that MT.RCLCK works correctly so

somebody must have put in code to filter out the sign bit in DATE which is seriously daft.

56. The conversion utility vectors in the ROM from $104 to $10E (Decimal 260 to 270) do not work (SYSTEM). AH JM
    Fix: Load Toolkit II on these systems or write your own code to do the equivalent conversions.
57. System fails to find more than one ROM when multiple add-ons are plugged in with ROM code in them (SYSTEM). AH JM
    Fix: Load software which will detect and initialise ROMs. Some add-ons will detect these ROM versions and initialise other ROMs, but of course this only works if they are the first ROM initialised by the system.
58. When LINE is used end pixels are often missing so gaps may appear in graphics drawn using LINE (SYSTEM). MG
    Fix: Load Lightning graphics module or use POINT to fill in the missing pixels by plotting the ends of lines using POINT each time.
59. Comparing strings can produce unexpected order of characters which varies from one ROM to another (SYSTEM). AH JM JS MG
    Fix: Write your own comparison routines using CODE and an order table or put up with oddities.
60. FOR or REPeat initialise a variable to 0 before starting to use it, hence destroying any previous value it may have had, so: AH JM JS MG

```
x=5:FOR x=x to 15:PRINT x
```

    ...will print values from 0 to 15 not 5 to 15.
    Fix: This is a daft thing to do anyway so don't: use a variable with a different name to store the initial value.
61. An attempt to READ a string into a slice of a string which has not been DIMensioned will not work, and in addition SuperBASIC may halt the program with no error message, e.g. AH JM JS MG

```
20 AnyOld$="QL User "
30 READ AnyOld$(4 TO )
40 DATA "World"
```

    ...will fail.
    Fix: Dimension strings before reading into a slice of a string or find a more sensible way of assigning values into strings.
62. Missing ENDs in a SuperBASIC program may cause the program to halt with no error message or any other indication of what went wrong: this appplies to END IF, END REPeat, END FOR or END DEFine (BASIC). AH JM JS MG
    Fix: All the SuperBASIC compilers will correct these or warn you about them. Alternatively try Better Basic or AutoIndent (the latter is in the QUANTA library on the Mark Knight utilities disk).
63. Using CLOSE on SuperBASIC channels #0, #1 or #2 can cause various problems, some of which may cause a complete lockout of the interpreter even if the channels have subsequently been reopened. These problems are more severe on AH and JM but are present on all the Sinclair ROMs (SYSTEM). AH JM JS MG
    Fix: Don't do it; do you really need to close #0, #1 or #2 anyway?
64. The (admittedly unlikely) key combination CTRL/ALT/7 can lock up the QL, freezing all software. On some systems the key combination may be CTRL/ALT/5 or another similar one. This is caused by an attempt to call the Sinclair hardware debugging aid using the level 7 interrupt (SYSTEM). AH JM JS MG
    Fix: Don't press this key combination unless you have the Sinclair Research hardware debugging aid connected to your QL (and if you do can I have a look?)
65. An integer variable can be given the value -32768 but an attempt to INPUT this value to it will fail with "error in expression" (BASIC). AH JM JS MG
    Fix: Restrict INPUT into integers to the range -32767 to 32767 instead of the documented -32768 to 32767 or INPUT to a floating point variable on a temporary basis.
66. MERGE and MRUN used inside a PROCedure or FuNction can cause serious confusion for the SuperBASIC interpreter due to movement of data within memory as the merge takes place (BASIC). AH JM JS MG
    Fix: Don't use MERGE or MRUN from inside a SuperBASIC PROCedure or FuNction.
67. COT(0) gives 1 but should fail with overflow (SYSTEM). AH JM JS MG
    Fix: Load Lightning maths extensions; note Lightning SE maths extensions may contain a worse bug in COT that will lock the system solid so beware. Try it with nothing critical in memory; best of all trap the value 0 in your programs.
68. CLS allows parameters other than the documented ones of 0 to 4 and produces spurious results when they are used (SYSTEM). AH JM JS MG
    Fix: No simple fix but if you check your listings carefully this bug doesn't matter.

■

BYTS OF WOOD

SAW POSITS OFFCUTS AND SNIPPETS

Mixed with some impressions from the Austrian QL Show

I had just put the last column into Jochen's box on the BBS when an article in the QL-users newsgroup had me searching the web for fodder for this one Sir Clive is building a new computer! This said don't go expecting a 'Son of QL' machine because, from things that people have said about his attitude to the 'old black box', he is not exactly a fan of our favourite machine. It is, however, interesting to see that he is once more looking into computers and anything that strikes at the near-monopoly exercised by Bill Gates has to be a good thing.

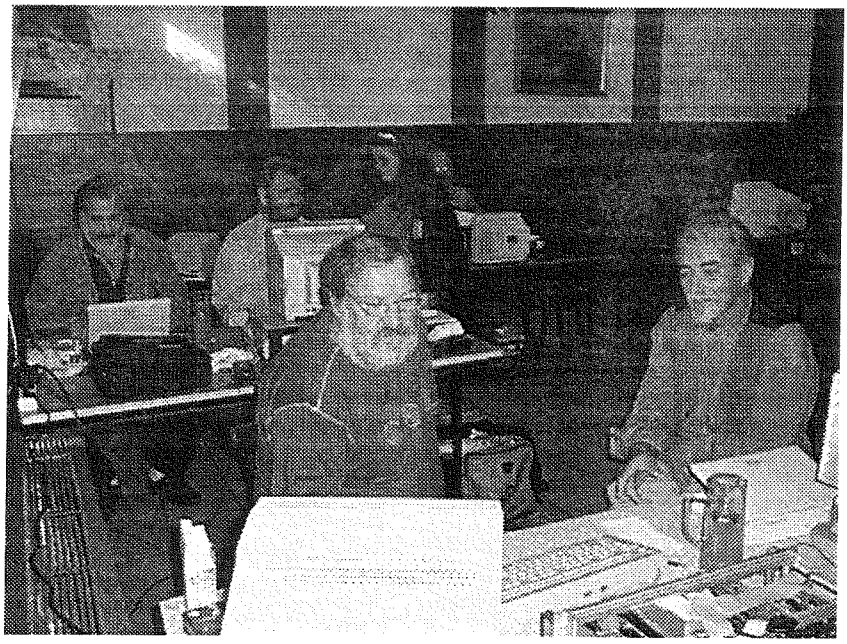
Sinclair Research also has an active web site,

http://www.sinclair-research.co.uk

Although this is restricted to comments about the Zeta electric bicycle motor and the tiny radio which goes into your ear. Still it is a start. I will keep an eye on the site to see if anything appears about his new machine and let you know if I find anything out. He plans to call it the 'ZX200' (2000 will be the most overused digit in the world over the next year or so and I look forward to the millenial backlash in which people are so fed up with the hype and hoo-haa that accompanies this over-exulted date that they opt to go back to the 19th century rather than move into the 21st - after you with that oil lamp, I'm growing my long sideburns now!). I am not even going to discuss the concept that the millenium should really start in 2001.

Table Top Technology

Once again the kitchen table in my house has been put to good use because Tony Firshman, Keith Mitchell and I spent the Wednesday evening before the Byfleet show examining the new Mplane and deciding how it should fit into a tower case and the MinisQL. Tony was suffering from a stomach bug at the time but we managed to power up two different systems using the new backplane and test all of



the relevent stuff. I have put one into my tower case already because it offers distinct advantages over the QPLane. Because the Mplane has the Aurora and Super Gold Card slots side by side you can not only mount the Aurora firmly but also screw the Super Gold Card down as well. It is always the Super Gold Card that falls out when I move the system and I have never really found a satisfactory way of holding it in so this will be great improvement.

A Month of Show Dates

After the quiet summer, in which there was not even a London show to go to, October burst onto the scene with great activity. We kicked off with the Byfleet show which was exceptionally well attended and hosted three releases. Rich Mellor sold a lot of copies of his SBASIC/SuperBASIC Reference Manual which was actually released the previous month but saw its first show outing here. Tony released the Mplane as I mentioned before and Qubbesoft had the new version 2 Qubide software. Marcel Kilgus was showing people the first versions of QPC2 (not available yet). This runs with a quite a turn of speed on my laptop but has, so far, no floppy or serial access. He was also much perplexed by the fact that it would not run on the Toshiba laptops *[it now does! - Jochen]* and would only run in the 3Meg setting on mine but it is an impressive bit of work and I am sure that he

will have ironed out the wrinkles before too long. It was good to see Dilwyn and Darren Brannagh there as well. All in all this was an excellent show and my thanks go out to the organisers.

The following weekend Jochen, Tony and myself were airbourne, courtesy of Peter Fox and his Piper Commanche, to Austria to attend the meeting in Heidenreichstein. This was a quiet show in a small town near the Czech border. The hospitality, food and hotel were superb and we did get a chance to chat to a few people about future QL projects. I won't go into too many details here but if one if these comes off there will be joy in the QL camp. Jochen and I were kicking around ideas for the new QD 98. QD has always seemed to me to be the Swiss Army Knife of programming and Jochen has been welding a few new blades onto it for this new release (nothing to remove boy scouts from horses hooves yet but you never know). As always the job is never quite finished but the new functions he showed me at this show are really quite neat.

These Austrian shows are quite unusual because there is always a collections of extra caricular activities arranged. This one featured a visit to a Glass blowing Factory and a trip on an old small gauge railway up into the hills. This can turn a visit to a QL show into a weekend break where you can bring your partner and enjoy a couple of days away.

At the end of the month the International Eindhoven meeting comes around again. This article will go to press before that but I will tell you about it in the next column.

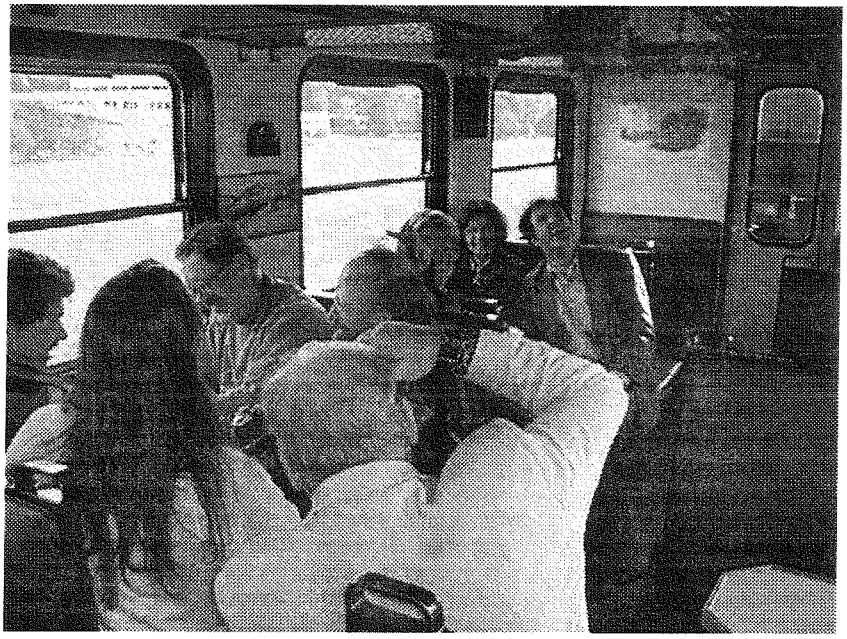
Hold the front Page!

Steve Hall tells me that Mark Knight has been in contact with Chas Dillon who has agreed to give him the source code for The Editor so he can make a few changes to it. Whether this will actually happen is, like all things, on the laptop of the godz but Steve is keen to find out if he can make a few changes to the program. In many ways The Editor is a great program with an awful user interface unless you have a good memory for shortcut keys.

Steve has already written a new configuration program for this that allows you to use some larger screens and this has now been improved to incorporate the SHIFT/F4 'on the fly' resizes. He has also written a pointer driven menu system for it which is very interesting.

If you would like to contact him about this write to Q Branch or email him at

steve@the-mount.freeserve.co.uk



Put Your Thinking Caps On

I have been discussing with Rich Mellor and a few others what new programs are needed and what people would like to have. Looking into the programs available for the PC I cannot think what we need for the QL. I am thinking of something along the lines of Q-Route. It is obvious that we need more graphic programs and Internet access but these things also have obvious problems so we must leave them out of the equation for the moment but, if you have any specific needs or wants, let us know at Q Branch.

They do ROM, Ron - Ron, they do ROM Ron

Version 2 of Qubide is a nifty piece of programming by Phil Borman. Soft sub-directories are now available which makes my sloppy method of dealing with my directories much easier. Since I have three machines on the go all the time - a Tower Case Aurora at home, a MinisQL in the shop and my laptop with QPC on it - keeping them all up to date is a bit of an

exercise. I often make a new sub-directory on one machine and copy it onto a floppy to be moved onto the other two. I then forget to make the other sub-directory and 'bingo' a whole swathe of files in the root directory. Not too much of a hardship with QPC because it always had the kind of directory structure that could make a directory when the files existed and then file them away for you - now Qubide does it too - whoopeee!!!

The other great thing is the trashcan which means that when you delete that all important file during housekeeping you can now find it in the trashcan, uncrumple it and put it back where it belongs. I used to have a trash disk and move things to that instead of deleting them but now I have a once weekly trashcan emptying session and all is fine. This is not even mentioning Zip drive support and possible CD-ROM access in the future. I am sure you will get all of this in the reviews. Oh yes and its fast too. All in all - well done Phil.

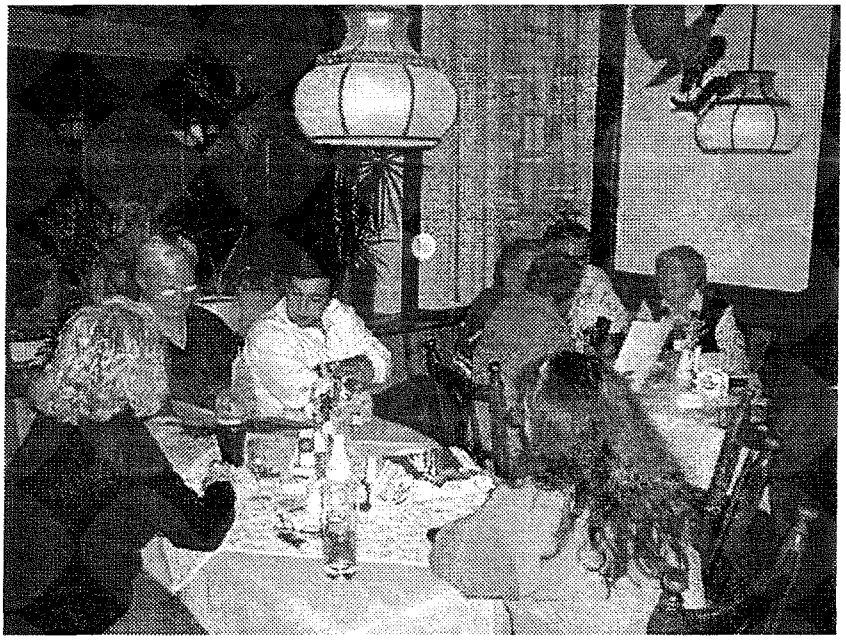
Buzzzzzzz

I seemed to have stirred up a hornets nest with my remarks in the last issue about the filing system - even Nasta had a go at me. Before I get branded too much as a computer luddite I feel I should just say one or two more things.

Firstly I am not against progress and while I did not say 'I do not use/need longer filenames' in the article in question that was, to degree, the implication. The whole point, for me, about this column is that it is my point of view. I welcome comments and disagreements with my views because sometimes I learn things that way but there really is no reason to get personally upset about it. This magazine is a forum and, if you have a different viewpoint to mine, write it up and we will print it. OK you may want longer filenames, I don't much care but I do care if it creates problems for other programs.

The thing that no-one has ever convinced me about is why they want to separate the path from the file name. What are the real advantages for the average user and what degree of compatibility with our current system can be built into a system that works in this way. Tell me and our other readers about it in language that is accessible to the average user. (I know you gave me a long email about this Nasta but I am afraid I am still not convinced) I am all for progress but it really has to be a progress that does not leave some of our current users scratching their heads and giving up in dismay. More to the point, which programs, currently in use on the system, will benefit from these innovations ?

Other systems cope with having separate paths and filenames mainly because they started off that way or adopted it some time ago when sub-directory support was added. The QL gained its sub-directory support without this function being added so most of the programs that we use are currently not geared up to use it. Nasta suggested changes to the DEV/PTH/SUB etc devices to allow programs to cope with the changes but I have a great dislike of these devices and would like to see them banished from the system altogether. I have said this before and of course this is a personal thing but my BOOT file does quote the path and filename all the time because that is a kind of index to tell me where things are loaded from if I forget. I do have a DATA_USE statement in my BOOT file but that is only because some programs need it to be pointed in the right direction for the data. I would not use it otherwise.



When Windows 95 adopted longer filenames it introduced a fudge whereby, if you look up a file with a long name from DOS it gets mangled down to something you cannot really read. This we do not need.

I know many QL users who type things in from the command line and use the COPY, WCOPY etc. commands instead of using file handling pro-

grams. What will happen to them? If the new system is introduced as an upgrade to SMSQ/E maybe they will not be using it but all of this needs to be considered and thought through carefully. I know a couple of users who bought QPC to put on laptops just so they had a portable platform to run Quill or Archive and QPC contains SMSQ/E so that argument falls flat.

A further point is who is going to write this new system? Are we going to put the colour drivers, new screen, Q40 and Milan on hold while Tony rewrites the operating system to do this?

Phil Borman came up with the best idea which was to have a second filing system running alongside the old one. New programs could recognise files from this system by a flag in the header and use them accordingly. Many of the members of this mailing list agreed with this view but no-one has yet come up with either a skeleton plan for its implementation or a beta version of the system. I wonder why?

I am not against such a system in theory and there is a lot to be said for the concept that new programs should be able to take advantage of the new features that have been added to SMSQ/E. Our current practice is to try to make all programs run on all of the ROMs and I do not really think that is the best plan. I would like to see programmers writing Software that is labelled 'Minimum system requirements: SMSQ/E v 2.80 / 2Meg Ram / Hard Disk Drive / etc.'.

The ball is in your court guys but write it up for the magazine please - not just the internet users group. If you have a viewpoint now is the time to share it.

Email flies like and Arrow (and fruit flies like a banana skin)

The problem with email is that it is so instant. You get a message, you type a reply, you hit the post icon and it is gone. With a letter there is always the time between the writing and the post box in which to consider its contents and change your mind. I would imagine we have all sent things that we would like to retract afterwards, I know I have.

With that in mind, one ql-users contributor (no names no pack drill) recently suggested that, 'If I cannot plug my Scanner and CD Recorder into my QL it is useless to me'. My first response was to say that is like saying, 'I have a car and a bicycle but, if I cannot drive my bike at 80mph on a motorway I will throw it away'. Of course this is nonsense but it does show up some peoples thinking with regard to the QL. The above comments were to do with the long filenames/paths discussion but I would like to point out that you cannot plug a scanner into the QL because it does not have a bi-directional parallel port or an ISA bus to plug it into and, although the CD Recorder could be accessed in the future via the new Qubide, they both need drivers. I do not think that even the above innovations would magically make these devices work.

PC Plod

I may have mentioned this before but the only time my PC is a PC is when I am accessing the internet, updating my website or scanning. Word for Windows may have a lot of wonderful features but it is just a word processor and I already have Text 87 so I use that. It is faster and I know it. Since I opened the shop and had to deal more with people who want to buy PC I have come to the conclusion that most people don't want a computer to do a job they want it as a status symbol. They march into PC World with a wheelbarrow full of money and come out with a 400MHz system which can do anything. All they are going to do with it is write letters to their mum and keep the accounts of their local boy scout group. These are both laudable activities but they have bought a multimedia multipound system and got a typewriter which does calculations and plays CDs - oh yes - and crashes.

Our problem is one of expectation. The general user thinks that all things are possible because he does not know how difficult they are. In some ways this is a zen state in which great things can be achieved but it does also lead to a lot of disappointment.

One user I know has a business running on several QLs with trump cards and DD disk drives. They work fine and do exactly the job he wants them to do but when I there a while ago I noticed that some were labelled 'Fitted with Hermes - internet ready'.

When the 'colour drivers carrot' was dangled in front of our noses a while ago many people thought it would happen overnight. when they did not appear some users gave up - as if they had only been using a QL for the last fifteen years while they were waiting for more colours. When you have a carrot just out of reach for long enough many people give up and go and have a MacDonalds - I don't. I am a vegetarian and a QL user both by choice.

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The QL Today Team wishes all QLers and their Families a Merry Christmas and a Happy New Year! 1999 is coming up, and with it the 4th volume of QL Today. We will work as hard as we did in the past to present you with more interesting themes, listings, reports, news ... but remember, it also depends on YOU! We are making this magazine for YOU, and we welcome every letter, report and article from our readers! Issue 6 will come with a cover disk, as usual. If you have any special requests for the disk contents, please tell us!

Looking forward into a long lasting future of the QL, all its derivatives and QL Today!

QL Show in Croatia

Saturday, 5th of September 1998. The venue is in Samobor (near Zagreb). The Show starts at 9:00 and will probably finish at 16:00. More information you can found on the home page:

http://www.hefest.tel.hr/hefest

TF Services, QBranch and JMS (with a Milan, most likely) will come.